THE INSECTS AND ARACHNIDS OF CANADA PART 5

The Crab Spiders of Canada and Alaska

Araneae: Philodromidae and Thomisidae

Agriculture Canada

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The Crab Spiders of Canada and Alaska

Araneae: Philodromidae and Thomisidae

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Acknowledgments

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Introduction

Although there has been sporadic collecting of spiders in Canada for more than a century, the spider fauna is not well known in any part of the country. Furthermore, most of the genera are in need of taxonomic revision. A compilation of current taxonomic knowledge, however preliminary, should enable students, technical assistants, and amateur and professional entomologists to make at least some identifications on their own. The authors hope that many users will go further and make new contributions to the field.

This book contains a key to spider families, a detailed treatment of the crab spiders (families Philodromidae and Thomisidae), and a glossary of anatomical terms used in spider taxonomy.

Anatomy

The body of a spider comprises two main divisions, the cephalothorax (*ceph*) and the abdomen (*abd*), which are separated by a slender pedicel (*ped*) (Fig. 1). The capsulelike cephalothorax is covered dorsally by a somewhat pliable shield, the carapace (*car*) (Fig. 5), and ventrally by a flat, rigid, often heart-shaped plate, the sternum (*st*) (Fig. 1). The eyes are borne near the anterior margin of the carapace, and the appendages project to the front and sides from the membrane between the edges of carapace and sternum.

The paired, pincerlike chelicerae (*chel*), characteristic feeding organs of the members of the subphylum Chelicerata, hang downward beneath the anterior end of the carapace (Fig. 1); they are used to seize and subdue live prey. Between the chelicerae and the mouth is the lobelike rostrum (*rost*), which covers the preoral cavity in front. Behind the preoral cavity is a pair of seven-segmented leglike appendages, the palpi; the palp-coxal lobes (*pcxl*) cover the sides of the preoral cavity, and the distal segments in adult males are uniquely developed as semen-storing and copulatory organs. The preoral cavity is covered posteriorly by a triangular plate visible on the ventral side and called the labium (*lab*) (Fig. 1). Posterior to the palpi are the legs, in four pairs as is generally characteristic of members of the class Arachnida (Fig. 5). The leg, like the palpus, has seven segments (Fig. 2), but the leg tarsus is subdivided into basitarsus (*btar*) and distitarsus (*dtar*), and its pretarsus (*ptar*) bears either two or three claws.

The abdomen is saclike and has a softer cuticle than the carapace or sternum. On the dorsal side the outline of the heart may be visible as a lance-shaped mark (*hm*) differing in color from the surrounding surface (Fig. 12). There may also be one or more pairs of small, round, muscle-attachment spots. The main feature on the ventral surface is a transverse line, the genital groove (*gg*) (Fig. 1). The opening of the internal reproductive organs (ovaries or testes) is located at the midline in the genital groove, and the epigynum of adult females with the paired copulatory openings is located in front of the genital groove. The copulatory openings (*co*) (Figs. 330, 336) lead inward

through the copulatory tubes (*ct*) (Fig. 93) to the spermathecae (*spt*) (Fig. 79), where semen is stored until egg-laying, when it passes down to the egg passage by way of a pair of short fertilization tubes (*ft*) (Fig. 88).

Laterad in the genital groove are the slitlike openings (*blo*) of a pair of book lungs (*bl*) (Fig. 6). A second pair of book lungs in representatives of the Mygalomorphae have openings located close behind those of the first pair (Fig. 4). Respiration in most spiders is partly by book lungs and partly by tracheae; in those groups having only one pair of book lungs, the tracheal spiracles (*trsp*) take the place of the missing second pair of book lungs (Figs. 6, 7, 15). The spiracles are most frequently conjoined at the midline and situated in front of the spinnerets (Fig. 6).

The abdominal spinnerets (*spin*), like the copulatory male palpus, are unique to spiders and typically form a compact cluster of three pairs at the posterior end (Fig. 1). A small plate called the colulus (*col*) may occur between the bases of the anterior pair of spinnerets (Fig. 21); the colulus replaces, in some spiders, a flat spinning plate called the cribellum (*cri*) (Figs. 30, 32, 33). The presence of a cribellum is correlated with that of a comblike row of stiff setae on basitarsus IV, the calamistrum (*cal*) (Figs. 25, 26), by which these spiders draw out the sticky threads from the cribellum. At the tip of the abdomen is the anal tubercle (*ant*), and the anus (*an*), which opens on the ventral side (Fig. 32).

Additional details of anatomy are given in the treatments of the various families and genera. For a comparative approach to spider anatomy, the reader is referred to Snodgrass (1952). Gertsch (1950) interestingly combines the functions of the various parts with their structure.

Technique

Most of the structures mentioned in the keys and descriptions in this work can be seen at magnifications of 50× or less with a stereoscopic microscope. Occasional magnifications up to 100× are necessary. A strong source of incident light is required.

Specimens are examined while they are fully submerged in 95% ethyl alcohol in low Stender or Petri dishes and manipulated with forceps and needles. Specimens or their parts can be examined on a bed of clean fine sand in the alcohol. Glass chromatography beads (about 60 mesh) or pads sectioned from the end of a roll of dental cotton also make good examination substrata. Both left and right palpi are examined, though the left palpus of the spider is drawn, by convention.

The epigynum may be cut around with the point of a needle and freed of muscle tissue for study of the copulatory tubes and spermathecae. Dark or complicated parts may be examined in clove oil. Dissected parts are stored in microvials, which are placed in the vial with the body of the specimen. Stained slide mounts may be necessary for very small epigynums such as

those of specimens of species found in the family Erigonidae, which are then examined under a compound microscope.

Measurements are made with an ocular micrometer. Those measurements usually given are the total body length, exclusive of legs (Fig. 5, *a*), carapace length and width (Fig. 5, *b*, *c*), and a leg measurement such as femur II length (Fig. 2, *d*). Means and standard deviations are usually given for samples of 10 or more specimens. Additional kinds of measurements are explained in the treatments of particular families or genera.

Spiders are collected by many of the same methods used for insects; the method selected depends on the particular purpose of the collection. They can be swept from grass and shrubs, beaten from trees, trapped in pitfalls on the ground, sifted from litter, or collected individually in vials by hand. They are preserved in 75% ethyl alcohol in neoprene-stoppered, homeopathic vials, or in cotton-stoppered vials that are packed in fruit preserve jars.

Classification of spider families

The following classification is based largely on inferences drawn by Platnick (1971), Platnick and Levi (1973), and Platnick and Gertsch (1976). Families 11–24 are specialized web-builders, and families 25–33 are specialized hunters.

Order **Araneae**
Suborder **Opisthothelae**

Infraorder		**Mygalomorphae**
Family	1	**Dipluridae**
	2	**Atypidae**
	3	**Antrodiaetidae**
	4	**Mecicobothriidae**
Infraorder		**Araneomorphae**
Family	5	**Loxoscelidae**
	6	**Scytodidae**
	7	**Telemidae**
	8	**Dysderidae**
	9	**Segestriidae**
	10	**Pholcidae**
	11	**Agelenidae**
	12	**Hahniidae**
	13	**Amaurobiidae**
	14	**Dictynidae**
	15	**Theridiidae**
	16	**Linyphiidae**
	17	**Erigonidae**
	18	**Uloboridae**
	19	**Oecobiidae**
	20	**Theridiosomatidae**
	21	**Araneidae**
	22	**Tetragnathidae**
	23	**Mimetidae**
	24	**Nesticidae**
	25	**Pisauridae**
	26	**Lycosidae**
	27	**Oxyopidae**
	28	**Gnaphosidae**
	29	**Clubionidae**
	30	**Anyphaenidae**
	31	**Philodromidae**
	32	**Thomisidae**
	33	**Salticidae**

Key to families

1. Cheliceral fangs closing toward midline (Figs. 50–52) 2

   Cheliceral fangs closing in plane parallel to midline (Fig. 57) 33

2(1). Eight eyes present 3

   Six eyes present 27

3(2). Leg tarsi two-clawed (without claw tufts, as in Fig. 11, or with claw tufts (*clt*), as in Figs. 8, 10) 4

   Leg tarsi three-clawed, the middle claw a small hook separate from pair dorsal to it (without claw tufts, as in Fig. 9) 9

4(3). Legs, at least I and II, laterigrade (Figs. 5, 12) (may include spiders of family Heteropodidae, sometimes imported from tropics or subtropics, also having laterigrade legs, but lacking colulus and having teeth on retromargin of fang furrow) 5

   Legs prograde 6

5(4). Legs I and II much longer and thicker than III and IV (Fig. 5); legs without scopulae or claw tufts (Fig. 11). Body setae stiff, erect or semierect ..... **Thomisidae**

   Legs I (and usually II) little if at all longer and thicker than III and IV (Fig. 12); legs usually with scopulae (*scop*) and claw tufts (*clt*) (Fig. 10). Body setae soft, not erect ..... **Philodromidae**

6(4). Eyes in one curving row (Figs. 13, 14); anterior median eyes (*ame*) twice or more as large as anterior lateral eyes (*ale*) (Fig. 13); posterior median eyes (*pme*) much smaller than posterior lateral eyes (*ple*) (Fig. 14) ..... **Salticidae**

   Eyes in two transverse rows; the anterior median eyes and anterior lateral eyes subequal and the posterior median eyes not smaller than posterior lateral eyes (Fig. 16) 7

7(6). Anterior spinnerets cylindrical, separated at base (Fig. 20), usually more heavily sclerotized than posterior spinnerets. Palp-coxal lobes with transverse or oblique depression (Fig. 18) (not conspicuous in specimens of *Orodrassus* spp.). Posterior median eyes elliptical, with their long axes on an angle to that of carapace (Fig. 16) ..... **Gnaphosidae**

   Anterior spinnerets (*aspin*) conical, not separated at base (Figs. 19, 21), not more heavily sclerotized than posterior spinnerets (*pspin*). Palp-coxal lobes without depression. Posterior median eyes usually round 8

8(7). Tracheal spiracle (*trsp*) situated at middle of venter or close to genital groove (Fig. 15) ..... **Anyphaenidae**

   Tracheal spiracle (*trsp*) situated immediately anterior to spinnerets (Fig. 17) ..... **Clubionidae**

9(3). Cribellum (Figs. 30, 32, 33) and, usually, calamistrum (Figs. 25, 26) present (calamistrum sometimes absent or weakly developed in males of Oecobiidae and in both sexes of some Dictynidae) 10

Cribellum and calamistrum absent 13

10(9). Eyes all appearing light in color. Cribellum (*cri*) often with dark longitudinal band at midline (Fig. 32). Calamistrum usually less than one-half length of basistarsus IV (Fig. 26) ..... **Amaurobiidae**

Eyes partially (usually anterior medians) or entirely dark. Cribellum (*cri*) usually without dark band at midline (Figs. 30, 33) (except specimens of *Mallos* spp. in family Dictynidae). Calamistrum (*cal*) nearly as long as basitarsus IV (Fig. 25) 11

11(10). Anal tubercle bearing double row of erect setae (Fig. 33) ..... **Oecobiidae**

Anal tubercle without double row of setae 12

12(11). Posterior row of eyes distinctly recurved (Fig. 22) ..... **Uloboridae**

Posterior row of eyes nearly straight ..... **Dictynidae** (in part)

13(9). Spinnerets arranged in nearly transverse row (Fig. 23) ..... **Hahniidae**

Spinnerets not arranged in transverse row 14

14(13). Distitarsi with dorsal trichobothria (*tric*) arranged in single row and increasing in length distally (Fig. 28). Spiders weaving sheet webs with tubular retreats ..... **Agelenidae**

Distitarsi with dorsal trichobothria not arranged in single row or increasing in length distally. Spiders building webs without tubular retreats, or not building webs 15

15(14). Tibia and basitarsus I and II with prolateral row of long stiff macrosetae that have spaces between them occupied by similar but shorter setae (Fig. 27) ..... **Mimetidae**

Tibia and basitarsus I and II without prolateral row of long stiff macrosetae 16

16(15). Eyes in approximately hexagonal arrangement (Fig. 24) ..... **Oxyopidae**

Eyes not in hexagonal arrangement 17

17(16). Distitarsi with dorsal trichobothria rising well above other setae (Fig. 29); leg trochanters (particularly trochanter IV) with deep notch (*tron*) in distal margin on ventral side (Fig. 31); legs often with scopulae. Spiders usually hunters 18

Distitarsi with dorsal trichobothria not rising above other setae, or without trichobothria. Leg trochanters usually without notch; legs without scopulae. Spiders web-builders 19

18(17). Posterior row of eyes forming rectangle; posterior median eyes (*pme*) three or more times as large as anterior median eyes (*ame*) (Fig. 35). Tibia of male palpus without apophysis ..... **Lycosidae**

Posterior row of eyes recurved; posterior median eyes (*pme*) less than three times as large as anterior median eyes (*ame*) (Fig. 34). Tibia of male palpus with apophysis (*tibia*) (Fig. 36) ..... **Pisauridae**

19(17). Six eyes grouped in two triads (Fig. 41) ..... **Pholcidae** (in part)

Eyes not grouped in triads 20

20(19). Distitarsus IV with comb composed of midventral row of curved serrated setae (Fig. 38) 21

Distitarsus IV without comb 22

21(20). Fleshy colulus (*col*) present (Fig. 43). Body pale, without spots or other color pattern. Paracymbium (*pcym*) of male palpus a conspicuous apophysis arising at base of cymbium (Fig. 48) ..... **Nesticidae**

Fleshy colulus absent or its position occupied by two setae (Fig. 47). Body with color pattern. Paracymbium of male palpus inconspicuous and arising distally on cymbium, or absent ..... **Theridiidae** (in part)

22(20). Height of front (*y*) less than length of median ocular area (*x*) (Figs. 37, 51). Spiders building orb webs 23

Height of front (*y*) equal to or greater than length of median ocular area (*x*) (Figs. 50, 52). Spiders building sheet, irregular, or orb webs 24

23(22). Chelicerae divergent from base (Fig. 51). Leg femora (particularly I and II) with dorsal trichobothria (*tric*) (Fig. 42) (except specimens of *Mimognatha* spp.) ..... **Tetragnathidae**

Chelicerae not divergent from base. Leg femora without trichobothria ..... **Araneidae**

24(22). Femur I distinctly thicker than femur IV. Sternum (*st*) truncate posteriad (Fig. 44). Abdomen spherical. Spiders building orb webs ..... **Theridiosomatidae**

Femur I not thicker than femur IV. Sternum usually pointed posteriad. Abdomen usually longer than wide or dorsoventrally compressed. Spiders building sheet or irregular webs 25

25(24). Abdomen silvery, sinuous, triangular, sometimes two-humped (Figs. 45, 46). Spiders living in webs of those of other families ..... **Theridiidae** (in part)

Abdomen not silvery, sinuous, triangular, or two-humped 26

26(25). Tibia IV with two dorsal macrosetae (Fig. 40). Palpal tibia of male without apophysis (Fig. 49) (palpal patella sometimes bearing apophysis, and males of *Agyneta* spp., *Porrhomma* spp., and *Microneta* spp. sometimes having small tibial apophysis) .... **Linyphiidae**

Tibia IV with one (rarely two, or no) dorsal macroseta (*mset*) (Fig. 39). Palpal tibia of male usually with apophysis (Fig. 53) (specimens of *Hilaira* spp., *Wubana* spp., and *Sciastes* spp. sometimes having

two dorsal macrosetae on tibia IV, as well as an apophysis on the male palpal tibia) ..... **Erigonidae**

27(2). Eyes in two triads 28

Eyes not in triads 29

28(27). Cribellum (Fig. 30) and calamistrum (Fig. 25) present .. **Dictynidae** (in part)

Cribellum and calamistrum absent ..... **Pholcidae** (in part)

29(27). Carapace strongly domed posteriad (Fig. 54) ..... **Scytodidae**

Carapace not domed 30

30(29). Abdomen globular (Fig. 55) ..... **Telemidae**

Abdomen not globular 31

31(30). Legs with macrosetae (at least legs III and IV) 32

Legs without macrosetae ..... **Loxoscelidae**

32(31). Leg tarsi with two claws, and with claw tufts. Lateral margins of sternum produced between bases of coxae ..... **Dysderidae**

Leg tarsi with three claws, without claw tufts. Lateral margins of sternum not produced between bases of coxae ..... **Segestriidae**

33(1). Anal tubercle (*ant*) remote from base of spinnerets (Fig. 58). Abdomen with one or more dorsal sclerites 34

Anal tubercle (*ant*) situated at base of spinnerets (Fig. 56). Abdomen without dorsal sclerites ..... **Dipluridae**

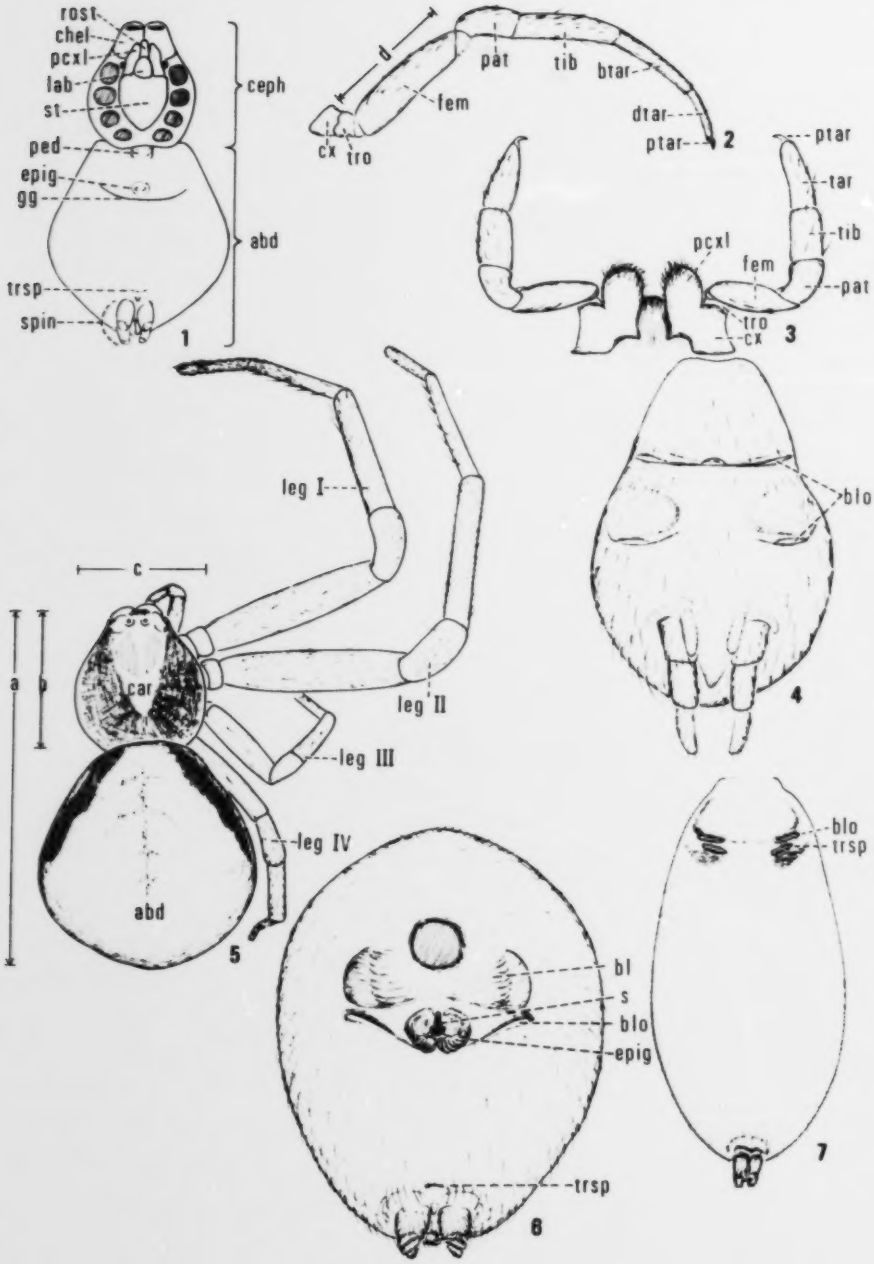
34(33). Palp-coxal lobes (*pcxl*) greatly enlarged (Fig. 57). Dorsal groove (*gr*) transverse (Fig. 61) ..... **Atypidae**

Palp-coxal lobes not greatly enlarged. Dorsal groove longitudinal (Fig. 59) 35

35(34). Chelicerae with rastellum (Fig. 60). Eye region elevated .... **Antrodiaetidae**

Chelicerae without rastellum. Eye region not elevated ... **Mecicobothriidae**

Figs. 1–7. Structures of spiders. 1, Body of *Misumena vatia* (Thomisidae), ventral view; 2, Leg of *Misumena vatia*; 3, Palpi of *Misumena vatia*, ventral view; 4, Abdomen of *Antrodiaetus* (Antrodiaetidae), ventral view; 5, Body of *Misumena vatia*, dorsal view; 6, Abdomen of *Nuctenea* (Araneidae), ventral view; 7, Abdomen of *Dysdera* (Dysderidae), ventral view. *a*, body length; *abd*, abdomen; *b*, carapace length; *bl*, book lung; *blo*, book lung opening; *btar*, basitarsus; *c*, carapace width; *car*, carapace; *ceph*, cephalothorax; *chel*, chelicera; *cx*, coxa; *d*, femur length; *dtar*, distitarsus; *epig*, epigynum; *fem*, femur; *gg*, genital groove; *lab*, labium; *pat*, patella; *pcxl*, palp-coxal lobe; *ped*, pedicel; *ptar*, pretarsus; *rost*, rostrum; *s*, scape of epigynum; *spin*, spinnerets; *st*, sternum; *tar*, tarsus; *tib*, tibia; *tro*, trochanter; *trsp*, tracheal spiracle.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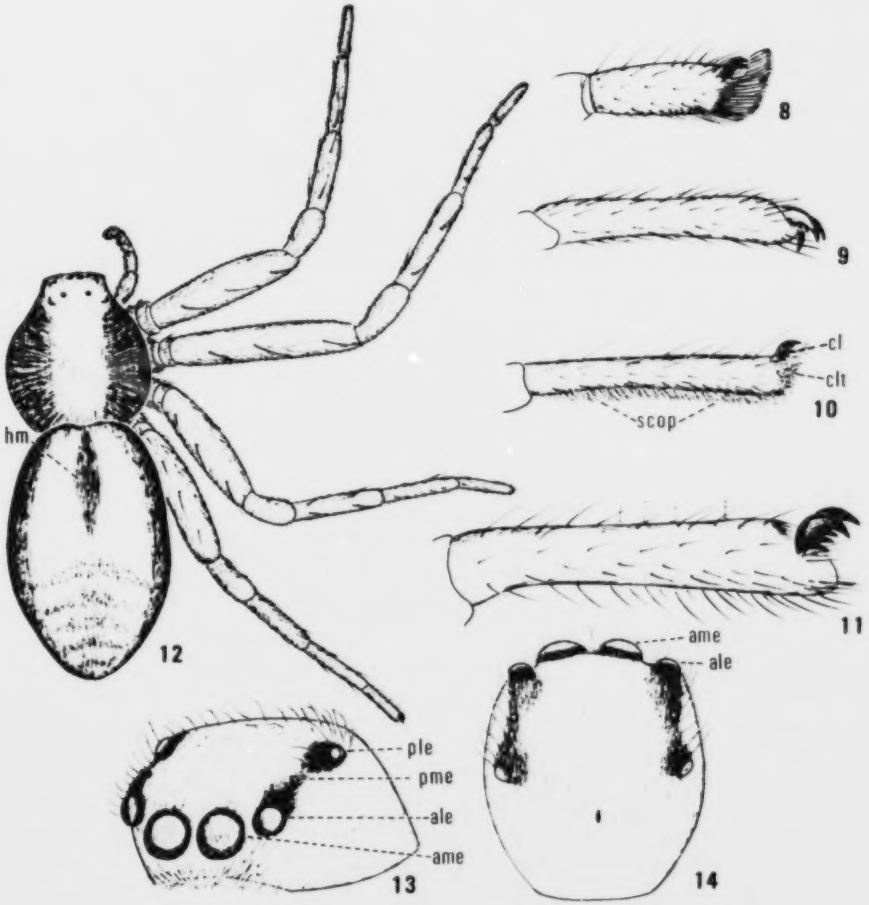
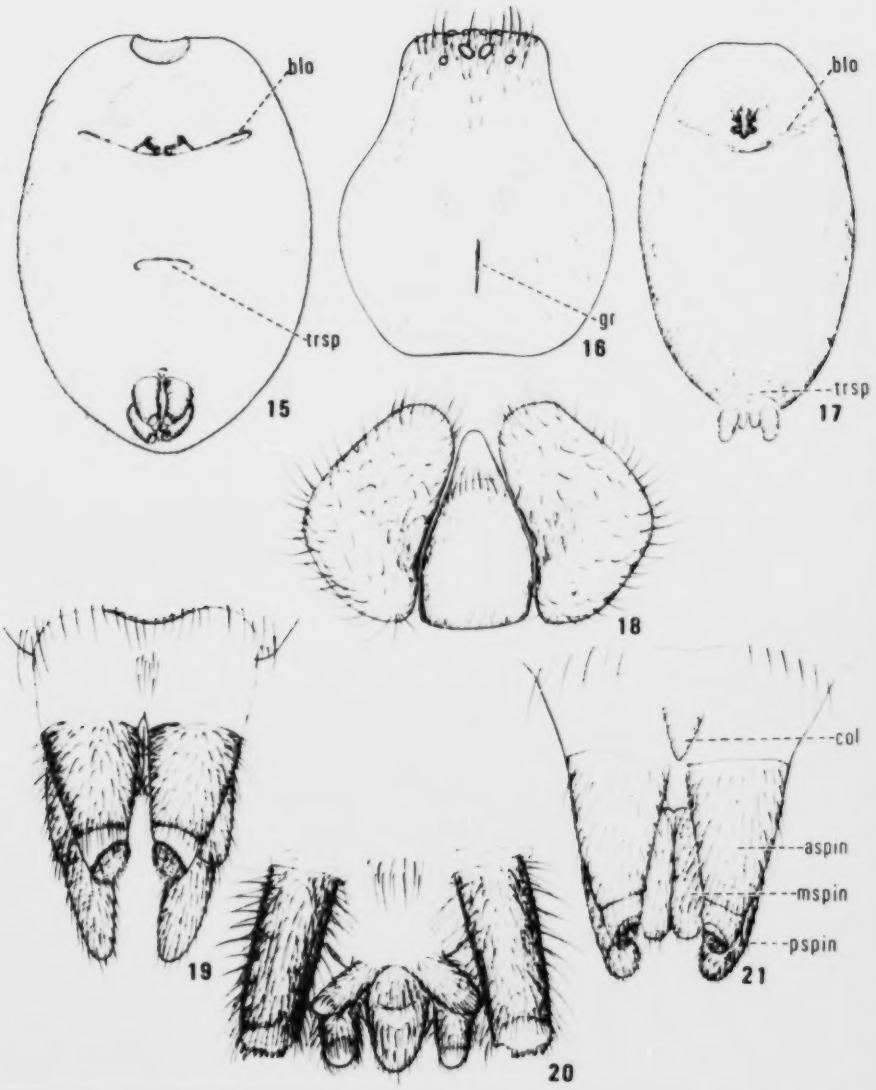


Figs. 8–14. Structures of spiders. 8, Leg tarsus of *Eris* (Salticidae) showing claw tuft; 9, Leg tarsus of *Araneus* (Araneidae) showing three claws; 10, Leg tarsus of *Philodromus* (Philodromidae) showing claw tuft and scopula; 11, Leg tarsus of *Xysticus* (Thomisidae) showing two claws but lacking claw tuft and scopula; 12, Body of *Philodromus*, dorsal view; 13 and 14, Carapace of *Eris* showing arrangement of eyes. *ale*, anterior lateral eye; *ame*, anterior median eye; *cl*, claw; *clt*, claw tuft; *hm*, heart mark; *ple*, posterior lateral eye; *pme*, posterior median eye; *scop*, scopula.



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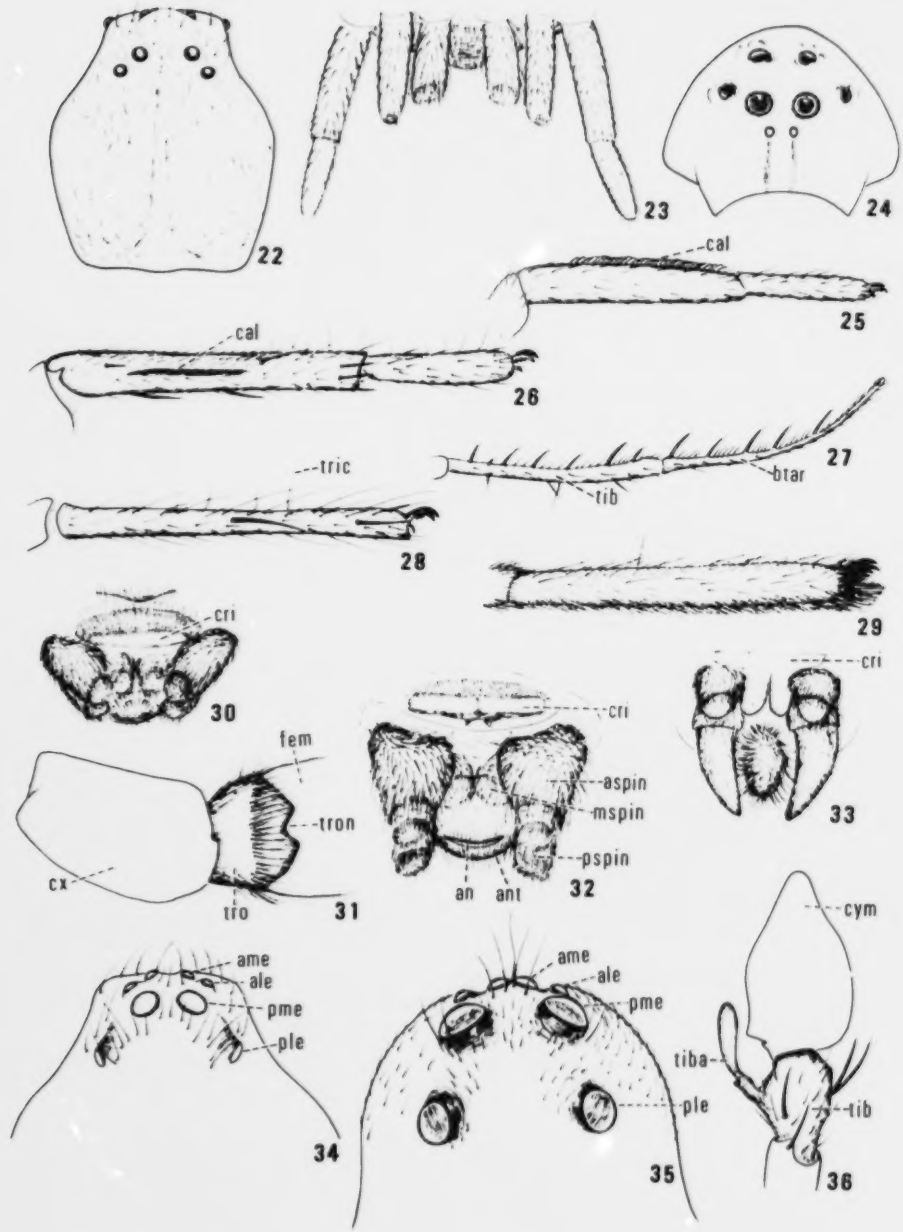
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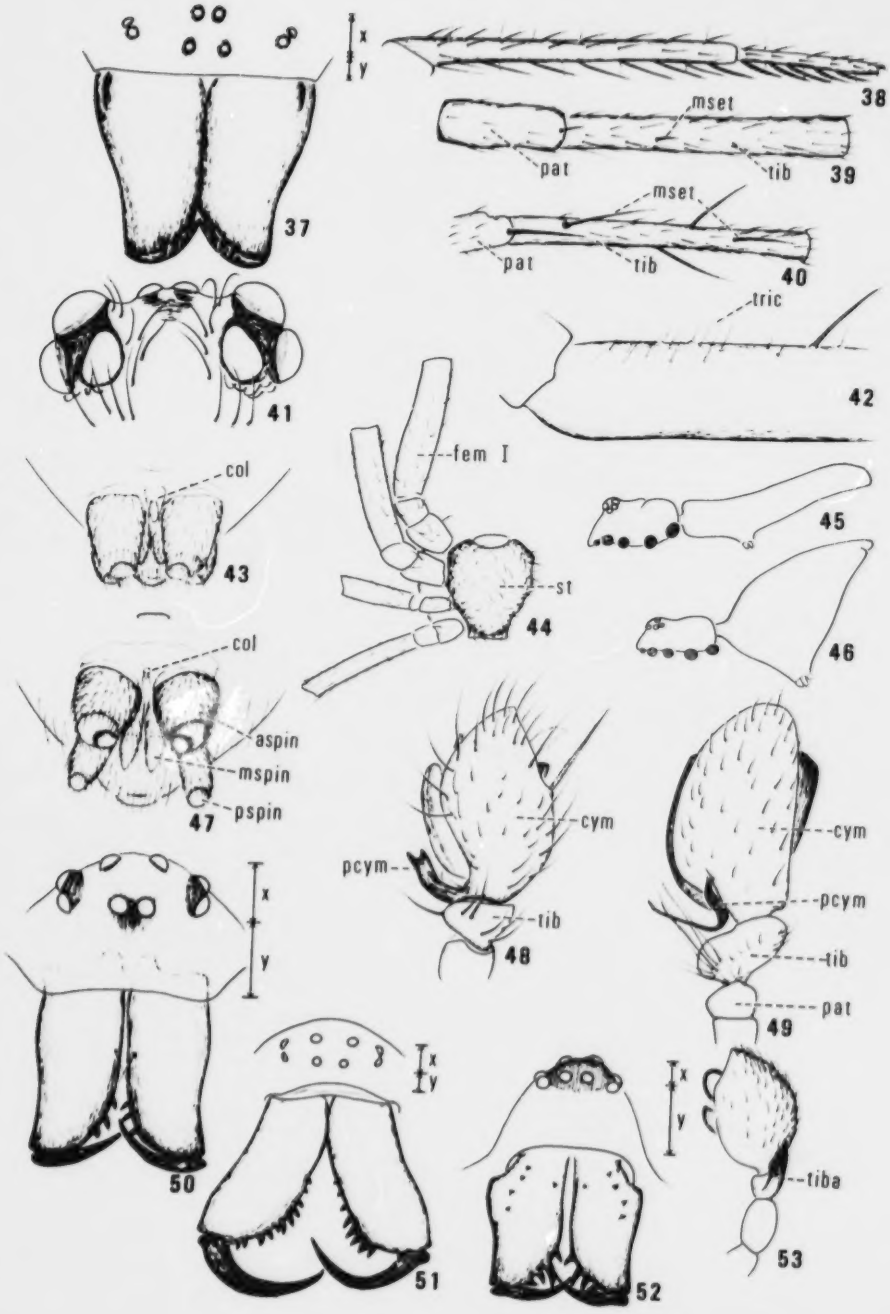
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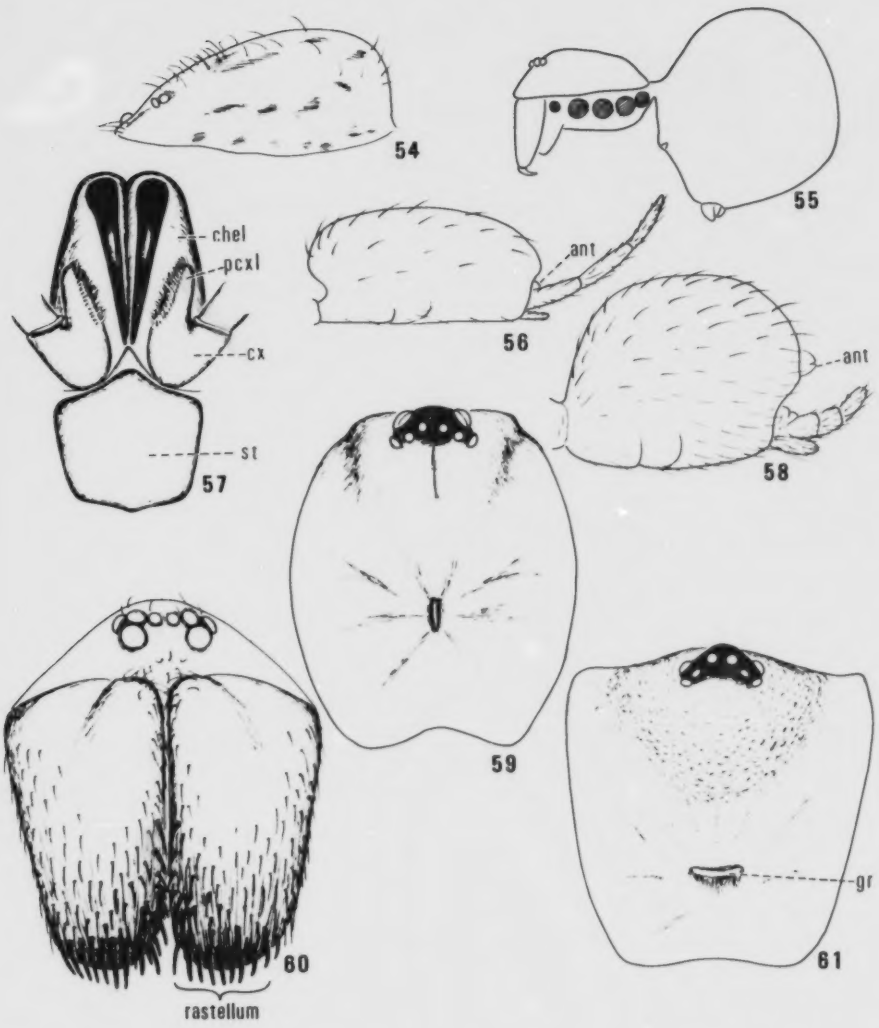
tiba
53

Figs. 37–53. Structures of spiders. 37, Carapace and chelicerae of *Araneus* (Araneidae), anterior view; 38, Tarsus IV of *Theridion* (Theridiidae) showing comb of stout curved setae; 39, Patella and tibia IV of *Erigone* (Erigonidae), dorsal view; 40, Patella and tibia IV of *Pityohyphantes* (Linyphiidae), dorsal view; 41, Eyes of *Pholcus* (Pholcidae); 42, Base of femur I of *Tetragnatha* (Tetragnathidae); 43, Spinnerets of *Nesticus* (Nesticidae); 44, Leg bases of *Theridiosoma* (Theridiosomatidae), ventral view; 45 and 46, Bodies of *Argyrodes* (Theridiidae), lateral view; 47, Spinnerets of *Dipoena* (Theridiidae), ventral view; 48, Palpus of male *Nesticus*, dorsal view; 49, Palpus of male *Neriene* (Linyphiidae), dorsal view; 50, Carapace and chelicerae of *Pityohyphantes*, anterior view; 51, Carapace and chelicerae of *Tetragnatha*, anterior view; 52, Carapace and chelicerae of *Erigone*, anterior view; 53, Palpus of male *Ceraticelus* (Erigonidae), dorsal view. *aspin*, anterior spinneret; *col*, colulus; *cym*, cymbium; *fem*, femur; *mset*, macroseta; *mspin*, median spinneret; *pat*, patella; *pcym*, paracymbium; *pspin*, posterior spinneret; *st*, sternum; *tib*, tibia; *tiba*, tibial apophysis; *tric*, trichobothrium; *x*, length of median ocular area; *y*, height of front.



Figs. 54–61. Structures of spiders. 54, Carapace of *Scytodes* (Scytodidae), lateral view; 55, Body of *Usofila* (Telemidae), lateral view; 56, Abdomen of *Evagrus* (Dipluridae), lateral view; 57, Chelicerae and palp-coxal lobes of *Atypus* (Atypidae), ventral view; 58, Abdomen of *Antrodiaetus* (Antrodiaetidae), lateral view; 59, Carapace of *Antrodiaetus*, dorsal view; 60, Chelicerae of *Antrodiaetus*, anterior view; 61, Carapace of *Atypus*, dorsal view. *ant*, anal tubercle; *chel*, chelicera; *cx*, coxa; *gr*, dorsal groove; *pcxl*, palp-coxal lobe; *st*, sternum.

Family Philodromidae

Spiders of the family Philodromidae typically have lithe flattened bodies, and their laterigrade legs are of nearly equal length and thickness. Their movements are rapid and erratic, and their claw tufts and scopulae permit life on the slippery and precipitous surfaces of plants. Some of these spiders find shelter and prey among the needles of conifers or in bark crevices; their modified legs and low bodies enable them to shuffle into such places without raising the leg joints.

Most philodromids overwinter in a nearly mature stage. They mature and mate in spring and lay eggs in early summer. A biennial life history occurs, at least in cool temperate latitudes (Dondale 1961*b*), though this cycle may be modified in regions with longer warmer summers (Putman 1967). The females build egg sacs of silk among the needles of conifers or within the fold of a hardwood leaf. Mating behavior has been studied in a few species (Dondale 1964, 1967), as has predatory behavior in *P. rufus* (*see* Haynes and Sisojević 1966).

Description. Total length at maturity 2.00–8.20 mm. Carapace rather flattened, usually slightly longer than wide, smoothly convex at lateral margins, usually various shades of yellow, off-white, or orange, with pale median band. Eyes usually uniform in size, without prominent eye tubercles, in two recurved rows; posterior row of eyes more curved than anterior row. Legs long, slender, with slender, semierect or recumbent macrosetae; leg II longest, though I and II usually slightly longer or stouter than III and IV; femur I lacking cluster of stout erect macrosetae; tarsi with two claws. Abdomen elongate-oval, widest at or posterior to middle, rather flattened dorsally, often with dorsal pattern consisting of dark heart mark and series of chevrons. Body setae scalelike or plumose, recumbent. Male palpal tibia with variously shaped retrolateral apophysis, and with or without ventral apophysis. Embolus of male short to long, slender, often arched around distal end of tegulum. Epigynum of female usually a flat plate with copulatory openings at its sides. Spermathecae usually kidney-shaped, sometimes with surface grooves; spermathecal organ present or absent.

Comments. The laterigrade legs and erratic movements of these spiders give them a superficial resemblance to representatives of the family Thomisidae. However, philodromids are more fleet than thomisids because of their flatter bodies and long, slender, scopulate legs of which at least I, III, and IV are nearly the same length (Figs. 12, 65, 66, 72, 73). There are no large eye tubercles, and the secondary eyes lack a tapetum (Homann 1975). The soft recumbent body covering contrasts with the more sparse, erect, and filiform setae of the thomisids. Most philodromids are tree or grass inhabitants, whereas the thomisids typically inhabit ground cover.

The Philodromidae comprise a world fauna of about 30 genera and 475 species. Of these, five genera and 102 species occur in North America. All five genera are represented in Canada, and these include 47 species.

Key to genera of Philodromidae

1. Posterior median eyes (*pme*) distinctly closer to posterior lateral eyes (*ple*) than to each other (Figs. 66–68, 71, 72) 2

   Posterior median eyes not distinctly closer to posterior lateral eyes than to each other (Figs. 62–65, 73) 3

2(1). Leg II approximately twice as long as leg I (Fig. 72). Anterior median eyes (*ame*) distinctly larger than anterior lateral eyes (Figs. 67, 71) ..... ***Ebo*** **Keyserling,** p. 29

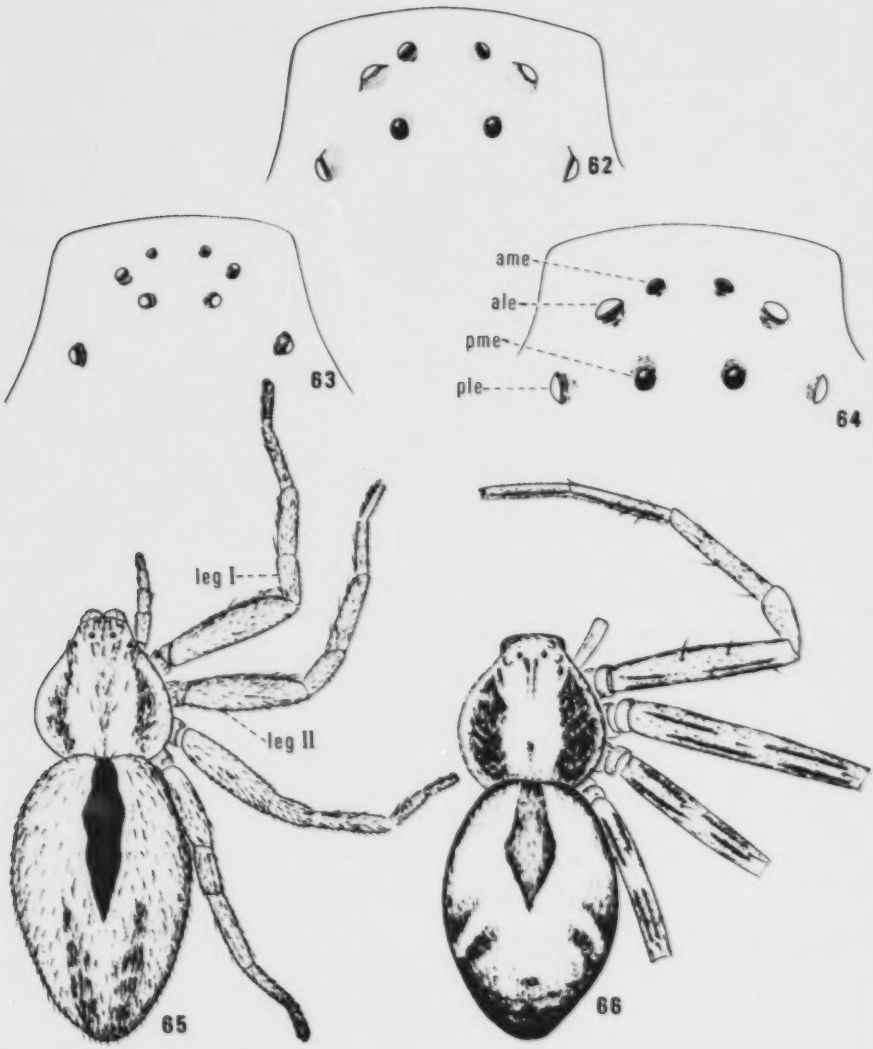
   Leg II distinctly less than twice as long as leg I (Fig. 12). Anterior median eyes not distinctly larger than anterior lateral eyes (Fig. 68) ..... ***Philodromus*** **Walckenaer,** p. 39

3(1). Carapace and abdomen with dark midstripe (Fig. 73). Posterior median eyes distinctly closer to each other than to posterior lateral eyes (Fig. 63) ..... ***Tibellus*** **Simon,** p. 96

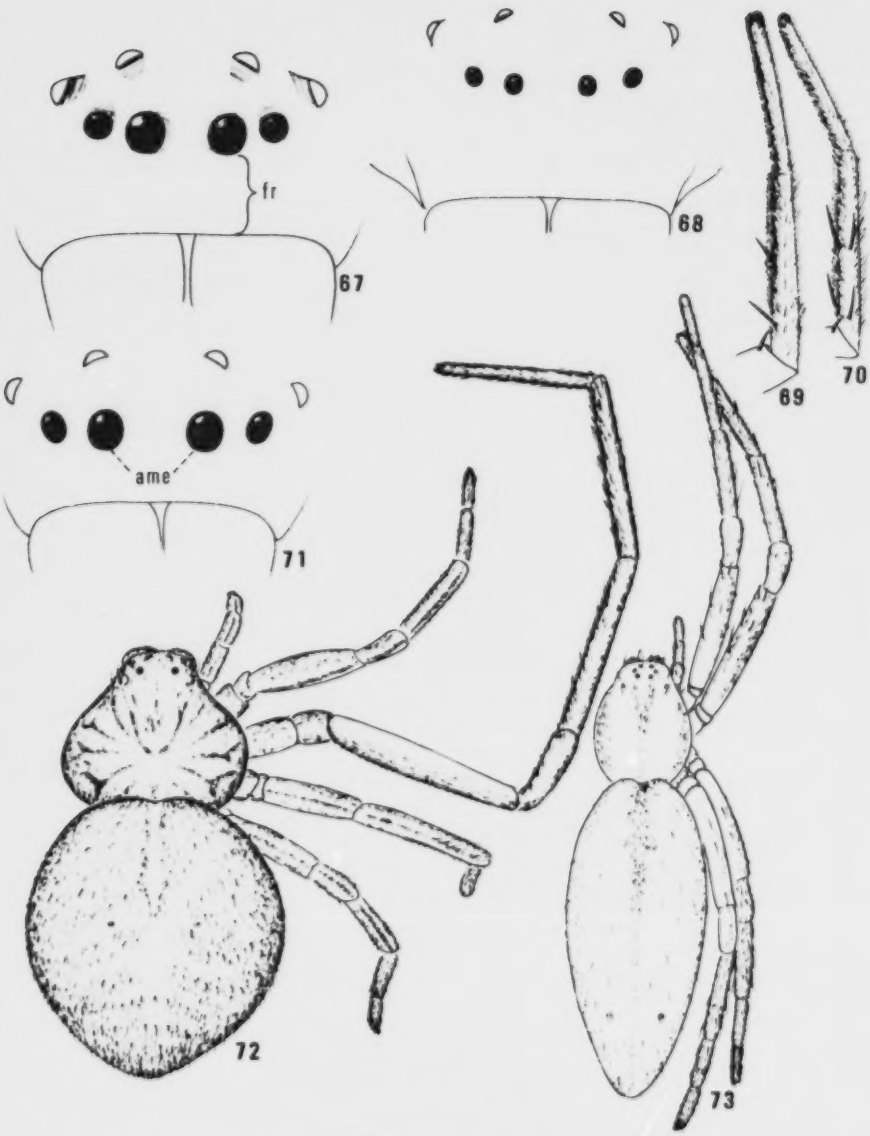
   Carapace and abdomen without dark longitudinal band. Posterior eyes approximately uniformly spaced (Figs. 62, 64) 4

4(3). Carapace longer than wide. Basitarsus I with one or more prolateral and retrolateral macrosetae (Fig. 70). Tibia of male palpus with two closely appressed apophyses (*ra, va*) (Fig. 349); tegulum (*teg*) of male palpus without membranous area at base of embolus (*e*) (Fig. 348) ..... ***Apollophanes*** **O. Pickard-Cambridge,** p. 104

   Carapace not longer than wide. Basitarsus I usually without prolateral or retrolateral macrosetae (except for males of *T. vulgaris*, and both sexes of *T. patricia*) (Fig. 69). Tibia of male palpus with a single apophysis (*ra*) (Figs. 358–360); tegulum (*teg*) of male palpus with membranous area at base of embolus (Figs. 358, 359) (except for males of T. vulgaris) ..... ***Thanatus*** **C.L. Koch,** p. 107



Figs. 62–66. Structures of Philodromidae. 62, Eyes of *Thanatus formicinus*, dorsal view; 63, Eyes of *Tibellus oblongus*, dorsal view; 64, Eyes of *Apollophanes margareta*; 65, Body of *Thanatus rubicellus*, dorsal view; 66, Body of *Philodromus histrio*, dorsal view. *ale*, anterior lateral eye; *ame*, anterior median eye; *ple*, posterior lateral eye; *pme*, posterior median eye.



Figs. 67–73. Structures of Philodromidae. 67, Eyes of *Ebo parabolis*, anterior view; 68, Eyes of *Philodromus cespitum*, anterior view; 69, Tarsus I of *Thanatus formicinus*, prolateral view; 70, Tarsus I of *Apollophanes margareta*, prolateral view; 71, Eyes of *Ebo iviei*, anterior view; 72, Body of *Ebo iviei*, dorsal view; 73, Body of *Tibellus oblongus*, dorsal view. *ame*, anterior median eyes; *fr*, front.

Genus *Ebo* Keyserling

Spiders of the genus *Ebo* are not well known biologically. They are rather scarce in collections, and many of those on hand were collected in pitfall traps on the ground, which tells us little except the generalized type of habitat in which they are active. Resembling specimens of *Philodromus* spp. in general shape and coloring, they are most often collected in grassland or woodland litter, in various shrubs or trees, and sometimes in buildings.

Description. Total length 2.04–6.25 mm. Carapace rather low, smoothly convex at lateral margins, usually wider than long, yellow, orange, orange brown, or gray, often marked with brown or black, pale along midline. Anterior median eyes larger than anterior lateral eyes; posterior median eyes closer to posterior lateral eyes than to each other. Legs long, slender, laterigrade, off-white or yellow, sometimes flecked or longitudinally banded with darker colors; leg II approximately twice as long as leg I. Dorsum of abdomen off-white, yellow, or pale brown, with darker heart mark, and usually with chevrons or other markings on posterior half. Male palpal tibia with retrolateral apophysis variously armed according to species, and with or without ventral apophysis. Epigynum of female a flat uniform plate. Spermathecae ovoid or kidney-shaped, with prominent spermathecal organ.

Comments. The characters that best separate specimens of *Ebo* spp. from those of other philodromid genera are the exceptionally long second pair of legs (Fig. 72) and the larger anterior median eyes relative to the anterior lateral eyes (Figs. 67, 71). The spacing of the eyes of the posterior row is the same as that found in specimens of *Philodromus* spp., though not in the other genera.

Sauer and Platnick (1972) revised the genus *Ebo*. Platnick (1972) subsequently described one additional species, bringing the total known from North America to 20. The genus has also been reported from the eastern Mediterranean region, India, and Argentina for a world fauna of 27 species. Six species occur or are suspected of occurring in Canada.

Key to species of *Ebo*

1. Height of carapace front approximately equal to or less than distance between anterior median eyes (*ame*) (Fig. 71). Tibia of male palpus without ventral apophysis (Fig. 76) 2

   Height of carapace front (*fr*) greater than distance between anterior median eyes (Fig. 67). Tibia of male palpus with ventral apophysis (*va*) (Fig. 99) 5

2(1). Legs I, III, and IV with longitudinal red brown band along dorsal surface 3

   Legs I, III, and IV without longitudinal red brown band along dorsal surface 4

3(2). Palpus with longitudinal red brown band along dorsal surface. Male palpal tibia with retrolateral apophysis asymmetrically tapered (Fig. 77); middle loop of seminal duct (*sem*) arching close to retrolateral margin of tegulum (*teg*) (Fig. 76). Spermathecae separated by distance equal to or greater than half the width of one spermatheca (Fig. 74) ..... ***iviei*** **Sauer & Platnick,** p. 30

Palpus with at most red brown flecking along dorsal surface. Male palpal tibia with retrolateral apophysis symmetrically tapered (Fig. 82); middle loop of seminal duct well-separated from retrolateral margin of tegulum (Fig. 81). Spermathecae separated by distinctly less than half the width of one spermatheca (Figs. 79, 80) ..... ***latithorax*** **Keyserling,** p. 33

4(2). Embolus (*e*) of male palpus broadly curved (Fig. 85); retrolateral apophysis of palpal tibia broad, serrate (Fig. 86). Spermathecae separated by distance equal to width of one spermatheca (Fig. 83) ..... ***pepinensis*** **Gertsch,** p. 34

Embolus of male palpus distinctly angular (Fig. 89); retrolateral apophysis of palpal tibia long, narrow, not serrate (Fig. 90). Spermathecae separated by distance less than half the width of one spermatheca (Fig. 88) ..... ***bucklei*** **Platnick** p. 36

5(1). Conductor length (Fig. 99, *a*) in male palpus usually greater than 0.6 times length of tegulum (Fig. 99, *b*); retrolateral tibial apophysis with seven unequal teeth (Figs. 100, 101). Anterior margins of copulatory tubes of female approximately transverse; spermathecal organ located at level of anterior margins of copulatory tubes (Fig. 98) ..... ***dondalei*** **Sauer,** p. 36

Conductor (*con*) length in male palpus usually less than 0.6 times length of tegulum (Fig. 94); retrolateral tibial apophysis with one to five teeth (Figs. 95, 96). Anterior margins of copulatory tubes (*ct*) of female oblique; spermathecal organ (*so*) located posterior to level of anterior margins of copulatory tubes (Figs. 92, 93) ..... ***parabolis*** **Schick,** p. 39

Ebo iviei Sauer & Platnick

Figs. 71, 72, 74–77; Map 1

Ebo iviei Sauer & Platnick, 1972:41, figs. 3, 4, 16.

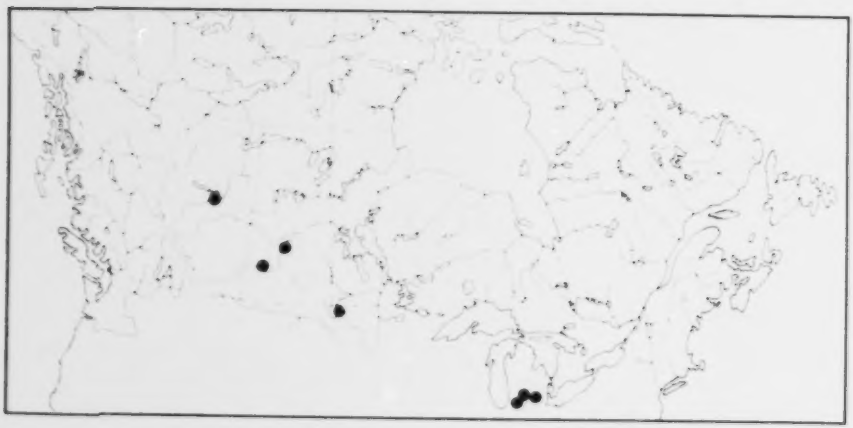
Male. Total length approximately 2.04 mm; carapace 0.94 ± 0.06 mm long, 1.06 ± 0.08 mm wide (12 specimens measured). Carapace pale yellow, with lateral areas margined and reticulated with red brown, and with the median area bordered with red brown. Legs pale yellow, flecked with red brown; patellae, tibiae, basitarsi, and sometimes femora of legs I, III, and IV with dark longitudinal band along dorsal surface. Dorsum of abdomen pale yellow, with darker heart mark, and with paired brown spots on western specimens and red brown flecks on eastern specimens. Palpus with dark longitudinal stripe. Palpal tibia with retrolateral apophysis asymmetrically

tapered toward tip (Fig. 77), without ventral apophysis. Tegulum with middle loop of seminal duct (*sem*) close to retrolateral margin (Fig. 76).

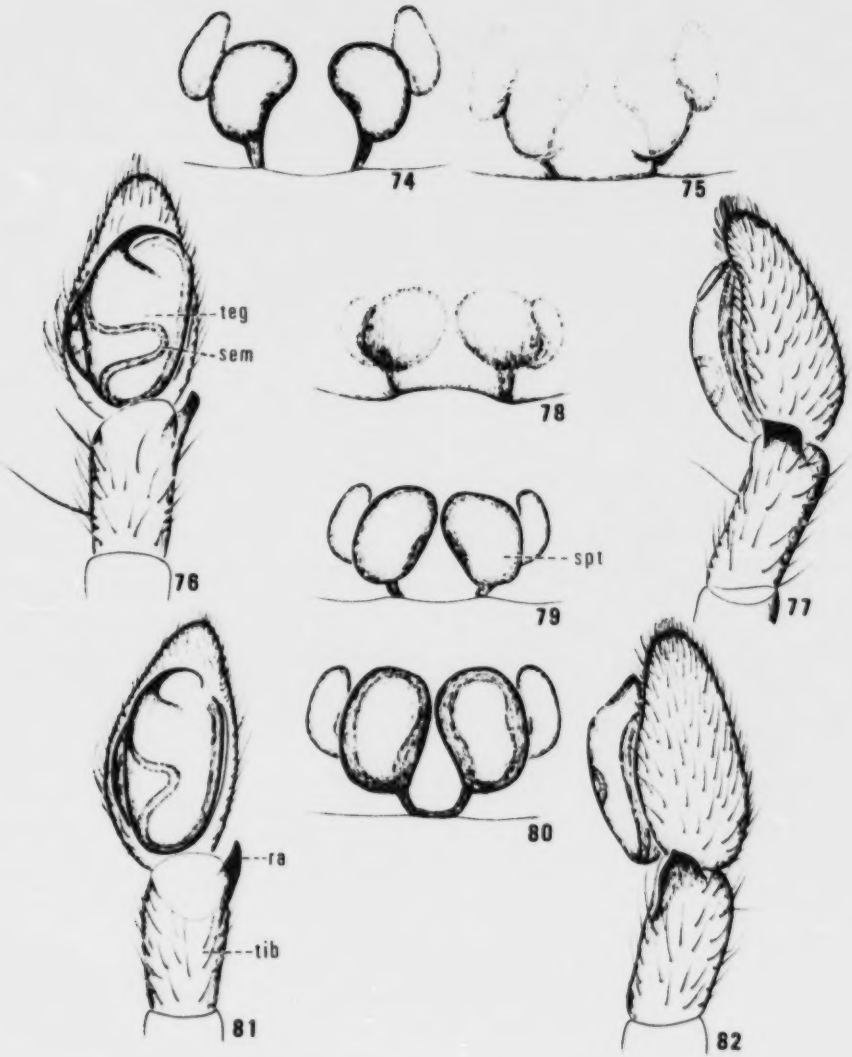
Female. Total length approximately 2.78 mm; carapace 1.05 ± 0.07 mm long, 1.20 ± 0.10 mm wide (20 specimens measured). General shape and color essentially as in male. Epigynum as in Fig. 75. Spermathecae kidney-shaped, separated by a distance equal to or greater than half the width of one spermatheca (Fig. 74).

Range. Oregon, Utah, Alberta, Saskatchewan, and eastward to Massachusetts.

Comments. The well-developed dark band on the palpus distinguishes both sexes of *E. iviei* from those of *E. latithorax*. The asymmetry of the retrolateral apophysis, the closeness of the seminal duct to the retrolateral margin of the tegulum, and the widely set spermathecae are also diagnostic for *iviei*. Collections are from marshes.



Map 1. Collection localities of *Ebo iviei*.



Figs. 74–82. Genitalia of *Ebo* spp. 74–77, *E. iviei*. 74, Spermathecae; 75, Epigynum; 76, Palpus of male, ventral view; 77, Palpus of male, retrolateral view. 78–82, *E. latithorax*. 78, Epigynum; 79 and 80, Spermathecae; 81, Palpus of male, ventral view; 82, Palpus of male, retrolateral view. *ra*, retrolateral apophysis; *sem*, seminal duct; *spt*, spermatheca; *teg*, tegulum; *tib*, tibia.

Ebo latithorax Keyserling

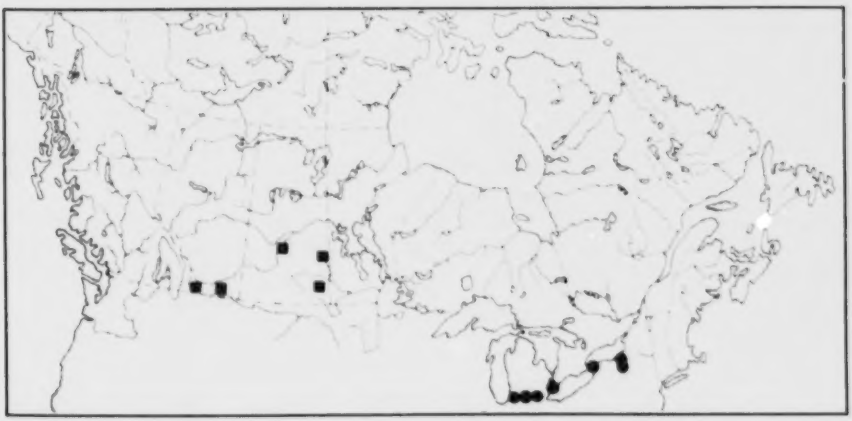
Figs. 78–82; Map 2

Ebo latithorax Keyserling, 1884*a*:678, figs. 26, 26*a*–26*c* (pl. 21); Sauer & Platnick 1972:38, figs. 1, 2, 15.

Male. Total length approximately 2.27 mm; carapace 1.07 ± 0.08 mm long, 1.19 ± 0.07 mm wide (24 specimens measured). Carapace orange brown, with front and eye area pale yellow, and with lateral areas flecked and sometimes reticulated with dark red brown. Legs pale yellow, flecked with red brown; legs I, II, and IV with longitudinal red brown band along dorsal surface. Palpus sometimes flecked with red brown dorsally. Palpal tibia with retrolateral apophysis symmetrically tapered (Fig. 82), without ventral apophysis. Tegulum with middle loop of seminal duct well-separated from retrolateral margin (Fig. 81).

Female. Total length approximately 2.82 mm; carapace 1.11 ± 0.10 mm long, 1.31 ± 0.09 mm wide (25 specimens measured). General shape and color essentially as in male. Epigynum as in Fig. 78. Spermathecae somewhat kidney-shaped, separated by much less than half the width of one spermatheca (Figs. 79, 80).

Range. Texas to Georgia, northward to Nebraska, Michigan, southern Ontario, and Massachusetts.



Map 2. Collection localities of *Ebo latithorax* (●) and *E. bucklei* (■).

Comments. The palpus, which lacks a distinct band along the dorsal surface, separates both sexes of *E. latithorax* from those of *E. iviei.* In addition, the symmetry of the retrolateral apophysis, the greater distance of the middle loop of the seminal duct from the retrolateral margin of the tegulum, and the closely set spermathecae are diagnostic for *latithorax.* Specimens have been collected by sifting of litter, by pitfall traps in fields and field margins, and by hand beneath logs. Occasional specimens are found in houses or in pine trees.

Ebo pepinensis Gertsch

Figs. 83–86; Map 3

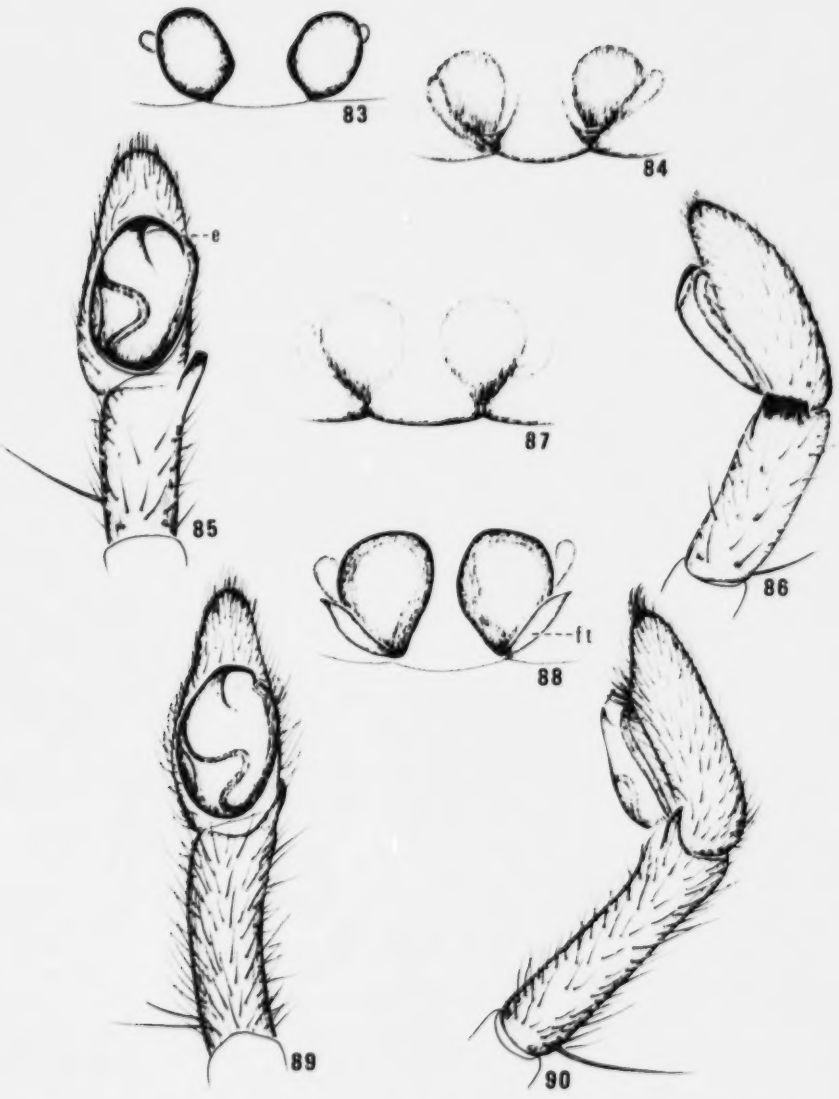
Ebo pepinensis Gertsch, 1933*c*:1; Sauer & Platnick 1972:43, figs. 11, 12, 19; Platnick 1972:58, figs. 4–6.

Male. Total length approximately 2.52 mm; carapace 1.08 ± 0.13 mm long, 1.25 ± 0.13 mm wide (25 specimens measured). Carapace orange brown with dark flecks, sometimes with narrow pale margin. Legs flecked with red brown, without longitudinal bands along dorsal surfaces. Dorsum of abdomen white to gray, usually with darker heart mark and some posterolateral stripes. Palpal tibia with truncate finely toothed retrolateral apophysis (Fig. 86), without ventral apophysis. Seminal duct (seen through ventral wall of tegulum) shallowly looped (Fig. 85). Embolus broadly curved (Fig. 85).

Female. Total length approximately 4.17 mm; carapace 1.29 ± 0.12 mm long, 1.51 ± 0.16 mm wide (25 specimens measured). General shape and color essentially as in male. Epigynum as in Fig. 84. Spermathecae broadly ovoid, separated by a distance approximately equal to width of one spermatheca (Fig. 83).

Range. California to Texas, northward to British Columbia, Alberta, Saskatchewan, the Great Lakes, and Sable Island, Nova Scotia.

Comments. Males of *E. pepinensis* are distinguished from those of *E. bucklei* and similar species by having a curved, rather than angular, embolus and a broad serrated tibial apophysis on the palpus. Females differ from those of *bucklei* by having the spermathecae more widely separated. Specimens have been collected by pitfall traps or under surface debris in grassland at elevations up to 3810 m.



Figs. 83–90. Genitalia of *Ebo* spp. 83–86, *E. pepinensis*. 83, Spermathecae; 84, Epigynum; 85, Palpus of male, ventral view; 86, Palpus of male, retrolateral view. 87–90, *E. bucklei*. 87, Epigynum; 88, Spermathecae; 89, Palpus of male, ventral view; 90, Palpus of male, retrolateral view. *e*, embolus; *ft*, fertilization tube.

Ebo bucklei Platnick

Figs. 87–90; Map 2

Ebo bucklei Platnick, 1972:58, figs. 1–3.

Male. Total length approximately 2.75 mm; carapace 1.29 ± 0.07 mm long, 1.40 ± 0.09 mm wide (23 specimens measured). Carapace orange brown, flecked with brown, reticulated with black. Legs flecked with red brown, without longitudinal bands along dorsal surfaces. Dorsum of abdomen pale brown with dark heart mark, and with some indistinct chevrons and posterolateral stripes. Palpal tibia longer than cymbium, with retrolateral apophysis not serrated (Fig. 90), without ventral apophysis. Seminal duct (as seen through ventral wall of tegulum) deeply looped (Fig. 89). Embolus angular (Fig. 89).

Female. Total length approximately 3.88 mm; carapace 1.44 ± 0.12 mm long, 1.59 ± 0.10 mm wide (10 specimens measured). General shape and color essentially as in male. Epigynum as in Fig. 87. Spermathecae broadly ovoid, separated by a distance less than width of one spermatheca (Fig. 88).

Range. Alberta and Saskatchewan.

Comments. Males of *E. bucklei* differ from those of *E. pepinensis* and similar species by having a nonserrated retrolateral apophysis on the palpal tibia and an angular embolus. Females differ from those of *pepinensis* by having the spermathecae closer together. Collections are from pitfall traps in prairie grassland. One specimen was collected under a board on the ground at 1524 m elevation.

Ebo dondalei Sauer

Figs. 97–101; Map 3

Ebo dondalei Sauer, 1968:1148, figs. 1–4; Sauer & Platnick 1972:56, figs. 36, 43.

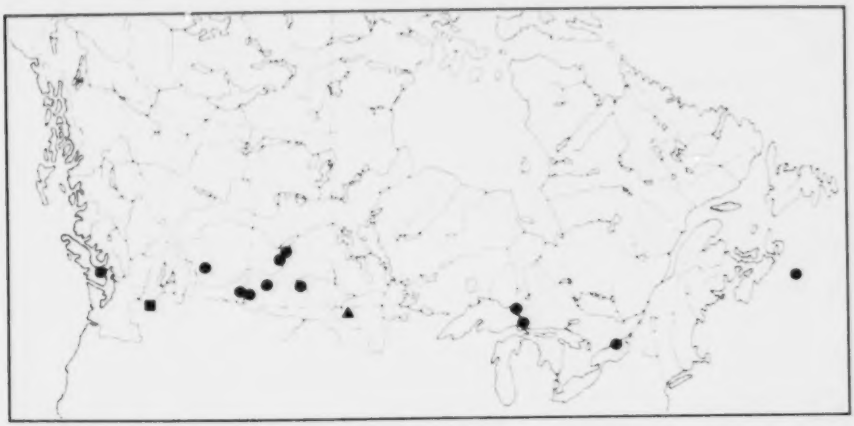
Male. Total length 3.05–4.50 mm; carapace 1.40–1.95 mm long, 1.45–1.90 mm wide (five specimens measured). Carapace dull gray; lateral areas reticulated with black; pale median area enclosing a white V anterior to dorsal groove. Legs pale yellow, flecked with gray brown. Dorsum of abdomen pale tan, with brown heart mark, and with some brown flecks. Palpal tibia slightly shorter than cymbium, with broad retrolateral apophysis armed with row of seven teeth (Figs. 100, 101). Tegular suture well-developed. Embolus long (Fig. 99); conductor usually greater than 0.6 times as long as tegulum (Fig. 99).

Female. Total length 4.05–6.25 mm; carapace 1.55–2.20 mm long, 1.60–2.15 mm wide (eight specimens measured). General shape and color essentially as in male. Epigynum as in Fig. 97. Spermathecae ovoid, with

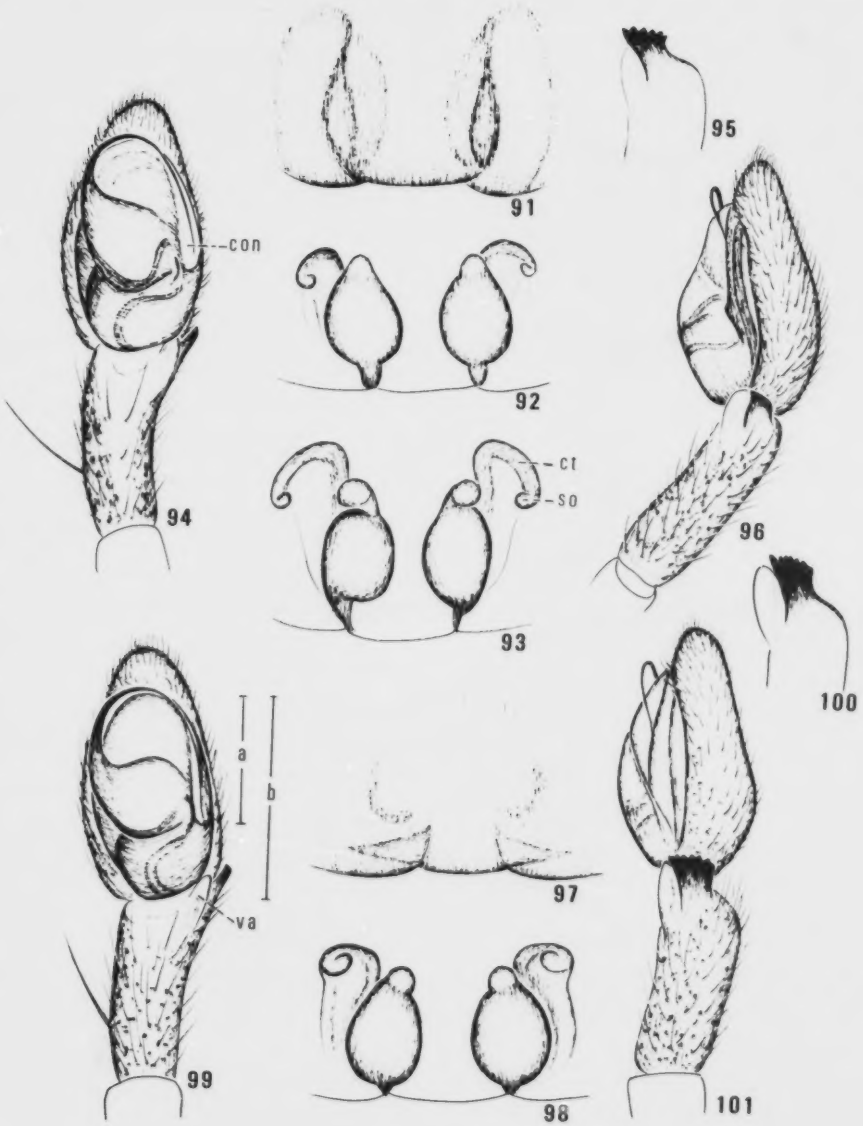
spermathecal organ at anterior end; anterior margins of copulatory tubes approximately transverse (Fig. 98).

Range. California and New Mexico, northward to North Dakota.

Comments. Males of *E. dondalei* have more teeth on the retrolateral apophysis of the palpal tibia and a longer conductor than males of *E. parabolis* and similar species. Females of *dondalei* have the anterior margins of the copulatory tubes approximately transverse rather than oblique. Specimens are from pastures, abandoned cropland, and chaparral.



Map 3. Collection localities of *Ebo pepinensis* (●), *E. dondalei* (▲), and *E. parabolis* (■).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Ebo parabolis Schick

Figs. 67, 91–96; Map 3

Ebo parabolis Schick, 1965:79, figs. 109, 110; Sauer & Platnick 1972: 56, figs. 37, 40.

Male. Total length approximately 3.73 mm; carapace 1.67 ± 0.17 mm long, 1.68 ± 0.15 mm wide (23 specimens measured). Carapace yellow to red brown; lateral area spotted with dark brown or black. Legs off-white to yellow, indistinctly banded with brown. Dorsum of abdomen off-white to yellow, with dark brown to gray heart mark, with lateral stripes, and sometimes with some bronze-colored scales. Palpal tibia nearly as long as cymbium, with retrolateral apophysis one- to five-toothed (Figs. 95, 96). Tegular suture well-developed. Embolus long (Fig. 94); conductor usually less than 0.6 times as long as tegulum (Fig. 94).

Female. Total length approximately 4.40 mm; carapace 1.74 ± 0.15 mm long, 1.77 ± 0.14 mm wide (25 specimens measured). Epigynum as in Fig. 91. Spermathecae ovoid, with spermathecal organ at anterior end; anterior margins of copulatory tubes sloped (Figs. 92, 93).

Range. California, Arizona, Colorado, and northward to Washington.

Comments. Males of *E. parabolis* usually have fewer teeth on the retrolateral apophysis and a shorter conductor than males of *E. dondalei* and similar species. Females of *parabolis* have the anterior margins of the copulatory tubes oblique rather than transverse. Specimens have been collected in sagebrush, creosote bush, scrub juniper, and various grasses.

Genus *Philodromus* Walckenaer

Spiders of this genus have the lithe flattened bodies and laterigrade legs typical of the family Philodromidae. Extremely agile on the stems and foliage of growing plants and often blending with the substrate in color, they are difficult to detect by sight alone. Beating, sweeping, or vacuum samples of orchard, forest, or grassland vegetation often yield large numbers of individuals.

Figs. 91–101. Genitalia of *Ebo* spp. 91–96, *E. parabolis*. 91, Epigynum; 92 and 93, Spermathecae; 94, Palpus of male, ventral view; 95, Palpal tibia of male, retrolateral view; 96, Palpus of male, retrolateral view. 97–101, *E. dondalei*. 97, Epigynum; 98, Spermathecae; 99, Palpus of male, ventral view; 100, Palpal tibia of male, retrolateral view; 101, Palpus of male, retrolateral view. *a*, conductor length; *b*, tegulum length; *con*, conductor; *ct*, copulatory tube; *so*, spermathecal organ; *va*, ventral apophysis.

Description. Total length 4.4–7.4 mm. Carapace rather flattened, smoothly convex at lateral margins, as long as wide or slightly longer, yellow, orange, or gray, pale along midline. Posterior median eyes closer to posterior lateral eyes than to each other. Legs long, slender, laterigrade; leg II slightly longer than other legs; legs I, III, and IV approximately equal in length and thickness. Abdomen often angular at sides, rather flat, bearing heart mark and several chevrons on dorsum. Male palpal tibia with retrolateral apophysis varying in shape according to species, usually with ventral apophysis. Embolus slender, hairlike, varying in length according to species. Epigynum usually with flat median septum; lateral margins distinct; atrium usually reduced to pair of small depressions located at anterolateral angles of median septum. Spermathecae varying in shape according to species.

Comments. Representatives of *Philodromus* spp. resemble those of *Ebo* spp. in general appearance. Both are distinguished from members of *Tibellus* spp., *Apollophanes* spp., and *Thanatus* spp. by the posterior median eyes, which are closer to the posterior lateral eyes than to each other (Fig. 68). Specimens of *Philodromus* spp. can be distinguished from those of *Ebo* spp. by the uniform size of the eyes in the anterior row (Fig. 68), and by the lack of conspicuous elongation in the second pair of legs (Fig. 12).

The worldwide genus *Philodromus* comprises some 162 species. The 60 North American species are distributed among several species groups based on characters of the external genitalia. Revisions in North American *Philodromus* were by Dondale (1961*a*) and Dondale and Redner (1968, 1969, 1975*a*, 1976*a*). Twenty-seven species occur or are assumed to occur in Canada.

Key to species and subspecies of *Philodromus*

1. Embolus (*e*) of male supported on conspicuous membrane; tegulum (*teg*) with curved seta near retrolaterodistal margin (Fig. 104). Copulatory tubes (*ct*) of female conspicuous, broad, saclike (Fig. 107); spermathecae extending posteriad to level of genital groove (Fig. 119) 2

   Embolus of male not supported on membrane; tegulum without curved seta near retrolaterodistal margin. Copulatory tubes of female not broad or saclike; spermathecae usually not extending posteriad to level of genital groove 10

2(1). Retrolateral apophysis of male palpal tibia slender, weakly tapered (Figs. 105, 109, 113). Atrium (*at*) of epigynum a single median depression (Figs. 102, 106, 110) 3

   Retrolateral apophysis of male palpal tibia stout or strongly tapered. Atrium of epigynum a pair of lateral depressions (Figs. 117, 131) 5

3(2). Ventral apophysis of male palpal tibia with two teeth, a short hard lateral one and a longer softer mesal one (Fig. 104). Copulatory tubes of female funnel-shaped, originating anterior to spermathecae (Fig. 103) ..... ***cespitum* (Walckenaer),** p. 45

Ventral apophysis of male palpal tibia with one tooth (Figs. 108, 112). Copulatory tubes of female not funnel-shaped, not originating anterior to spermathecae 4

4(3). Embolus arising at base of tegulum (Fig. 108). Atrium (*at*) of epigynum wider anteriad than posteriad (Fig. 106); copulatory tubes (*ct*) looped anteriad (Fig. 107) ..... ***laticeps*** **Keyserling,** p. 48

Embolus arising prolaterad on tegulum (Fig. 112). Atrium of epigynum not wider anteriad than posteriad (Fig. 110); copulatory tubes not looped anteriad (Fig. 111) ..... ***lutulentus*** **Gertsch,** p. 48

5(2). Tibia of male palpus approximately twice as long as patella; retrolateral apophysis of tibia as broad as long, truncate at tip (Fig. 116). Epigynum with anterior margins of atrium indistinct and atrium greatly reduced in size (Figs. 117, 118); mesal margins of copulatory tubes arched laterad in anterior third (Figs. 119, 120) ..... ***spectabilis*** **Keyserling,** p. 50

Tibia of male palpus less than twice as long as patella; retrolateral apophysis of tibia appearing as one or more acute points. Epigynum with anterior margins of atrium distinct and atrium usually large (Figs. 126, 131); mesal margins of copulatory tubes nearly parallel (Fig. 124) or arched mesad (Fig. 133) 6

6(5). Retrolateral apophysis of male palpal tibia short, wide, with two points nearly equal in size (Fig. 123). Atrium of epigynum small, nearly round (Figs. 126, 127) ..... ***keyserlingi*** **Marx,** p. 52

Retrolateral apophysis of male palpal tibia longer, wider, with two points unequal in size. Atrium of epigynum larger, irregular in shape 7

7(6). Embolus of male with stout hollowed projection at base (Fig. 128). Median septum of epigynum with narrowed anterior part occupying approximately one-half length of epigynum (Figs. 131, 132) .... ***pernix*** **Blackwall,** p. 53

Embolus of male without stout hollowed projection at base. Median septum of epigynum with narrowed anterior part occupying distinctly less than one-half length of epigynum 8

8(7). Retrolateral apophysis of male palpal tibia nearly truncate (Fig. 138); embolus with one or two angular swellings near its base (if two present, then they are not at same level) (Figs. 135, 137). Dorsal surfaces of copulatory tubes with deep longitudinal folds (Figs. 141–143) ..... ***vulgaris*** **(Hentz),** p. 55

Retrolateral apophysis of male palpal tibia pointed; embolus with two angular swellings near its base (both at same level) (Figs. 144, 153); dorsal surfaces of copulatory tubes without deep longitudinal folds 9

9(8). Retrolateral apophysis of male palpal tibia deeply indented (Figs. 146–149); copulatory tubes cylindrical and approximately parallel (Figs. 150, 151) ..... ***californicus*** **Keyserling,** p. 56

Retrolateral apophysis of male palpal tibia not deeply indented (Fig. 155). Copulatory tubes not cylindrical, not parallel (Figs. 156, 158) ..... ***praelustris*** **Keyserling,** p. 58

10(1). Male palpus with stout fingerlike conductor (*con*) (Fig. 159); retrolateral apophysis (*ra*) of tibia with two points, one of which is appressed to the ventral apophysis (*va*) (Figs. 159, 160). Spermathecal organ ducts (*sod*) of female approximately as long as spermathecae (Figs. 162, 164) ..... ***infuscatus infuscatus*** **Keyserling,** p. 60

Male palpus without stout fingerlike conductor; retrolateral apophysis of tibia usually with one point that is never appressed to ventral apophysis. Spermathecal organ ducts of female shorter or longer than spermathecae 11

11(10). Embolus of male terminating at about 135° on circular tegulum (Fig. 165). Spermathecae of female bearing long loosely coiled spermathecal organ ducts (Fig. 167) ..... ***dispar*** **Walckenaer,** p. 62

Embolus of male terminating at about 10°; tegulum irregular. Spermathecae of female not bearing long loosely coiled spermathecal organ ducts 12

12(11). Embolus of male stout, rather flat (Figs. 169,188). Basitarsus I of both sexes with maximum of two pairs of ventral macrosetae (the second pair from the base situated at middle of segment or more basad). Female with dense tarsal scopula (Fig. 66) 13

Embolus of male slender, not flat. Basitarsus I of both sexes with more than two pairs of ventral macrosetae. Female with sparse tarsal scopula 15

13(12). Tibia of male palpus with one apophysis (Figs. 169, 175). Epigynum of female with large deep atrium (Figs. 176–179) ..... ***histrio*** **(Latreille),** p. 63

Tibia of male palpus with more than one apophysis. Epigynum of female with shallow atrium 14

14(13). Tibia of male palpus with slender pointed ventral apophysis (*va*) set close to retrolateral apophysis (*ra*) (Figs. 184, 185). Epigynum of female with median septum (*ms*) occupying anterior half of atrium (Fig. 186) ..... ***mysticus*** **Dondale & Redner,** p. 65

Tibia of male palpus with plump ventral apophysis set apart from retrolateral apophysis (Figs. 188–191). Epigynum of female with median septum not occupying anterior half of atrium (Figs. 192–195) ..... ***alascensis*** **Keyserling,** p. 67

15(12). Embolus of male arising retrolaterobasad or basad on tegulum (Figs. 199, 206). Copulatory tubes (*ct*) of female coiled around spermathecae (Figs. 203, 212) 16

Embolus of male arising prolaterad on tegulum. Copulatory tubes of female not coiled around spermathecae 19

16(15). Embolus of male arising retrolaterobasad on tegulum (Figs. 206, 214). Copulatory tubes (*ct*) of female arranged in one and one-half or two coils around spermathecae (Figs. 212, 225) 17

Embolus of male arising basad on tegulum (Fig. 199). Copulatory tubes of female arranged in one coil around spermathecae (Figs. 203, 204) ..... ***marxi*** **Keyserling,** p. 69

17(16). Base of embolus in male concealed by ventral apophysis (*va*) of palpal tibia (Fig. 206). Copulatory tubes (*ct*) of female arranged in two coils (Figs. 211–213) ..... ***imbecillus*** **Keyserling,** p. 71

Base of embolus in male not concealed by ventral apophysis of palpal tibia. Copulatory tubes of female arranged in one and one-half coils 18

18(17). Retrolateral apophysis of male palpal tibia erect, two-pointed (Figs. 215, 216). Spermathecae of female set close together (Figs. 218–220) ..... ***mineri*** **Gertsch,** p. 73

Retrolateral apophysis of male palpal tibia recumbent, one-pointed (Fig. 222). Spermathecae of female set well apart (Figs. 224–226) ..... ***insperatus*** **Schick,** p. 75

19(15). Embolus of male slender, curved throughout its length; tip of retrolateral apophysis of palpal tibia extending well beyond tip of ventral apophysis (Figs. 227, 249). Epigynum of female with atrium perforated so that spermathecae are partly visible externally (Figs. 233, 259) 20

Embolus of male not slender, not curved throughout its length; tip of retrolateral apophysis extending little if any beyond tip of ventral apophysis (Figs. 261, 281). Epigynum of female with atrium not perforated (Figs. 264, 283) 23

20(19). Retrolateral apophysis of male palpal tibia angular along ventral margin (Figs. 229, 240, 245). Legs of male vibrating during courtship. Epigynum of female with narrow septal web (*sw*) (Fig. 233) 21

Retrolateral apophysis of male palpal tibia not angular along ventral margin (Figs. 252, 255, 258). Legs of male not vibrating during courtship. Epigynum of female with wide septal web (Fig. 259) ..... ***exilis*** **Banks,** p. 82

21(20). Carapace yellow brown laterad, finely speckled and streaked with black (Fig. 232); carapace of males usually less than 1.38 mm wide, and of females usually less than 1.45 mm wide ..... ***rufus vibrans*** **Dondale,** p. 77

Carapace orange red to orange brown laterad, not speckled or streaked with black; carapace of males more than 1.38 mm wide, and of females more than 1.45 mm wide 22

22(21). Legs and abdomen usually not speckled. Specimens found west of Rocky Mountains (Map 15) ..... ***rufus pacificus*** **Banks,** p. 79

Legs and abdomen speckled. Specimens found in Rocky Mountains and boreal forests (Map 16) ..... ***rufus quartus*** **Dondale & Redner,** p. 80

23(19). Leg III and usually IV with thin dark longitudinal bands along prolateroventral surface (Fig. 260) and along retrolateroventral surface ..... ***minutus*** **Banks,** p. 84

Legs III and IV without dark longitudinal bands 24

24(23). Male 25

Female 30

25(24). Embolus arising on basal half of tegulum (Figs. 271, 290) 26

Embolus arising midway along tegulum (Fig. 308) or on distal half (Fig. 316) 29

26(25). Carapace and abdominal dorsum with coat of shiny scales. Palpal tibia not more than 1.5 times as long as wide 27

Carapace and abdominal dorsum without coat of shiny scales. Palpal tibia more than 1.5 times as long as wide 28

27(26). Carapace orange. Leg segments not dark at ends. Retrolateral apophysis of palpal tibia with one point (Figs. 272–274) ..... ***peninsulanus*** **Gertsch,** p. 86

Carapace brown. Leg segments dark at ends. Retrolateral apophysis of palpal tibia with two points (Fig. 282) ..... ***placidus*** **Banks,** p. 87

28(26). Embolus arising near midpoint of tegulum (Fig. 290) ..... ***speciosus*** **Gertsch,** p. 90

Embolus arising near base of tegulum (Fig. 298) ..... ***oneida*** **Levi,** p. 91

29(25). Carapace orange or orange brown. Legs without dark markings ..... ***rodecki*** **Gertsch & Jellison,** p. 93

Carapace mottled brown and yellow. Legs with dark markings ..... ***josemitensis*** **Gertsch,** p. 94

30(24). Copulatory tubes visible in dorsal view (dissected genitalia) (Figs. 278, 287) 31

Copulatory tubes not visible in dorsal view (Figs. 296, 323) 32

31(30). Carapace orange. Leg segments not dark at tips. Spermathecae coiled (Figs. 277–279) ..... ***peninsulanus*** **Gertsch,** p. 86

Carapace brown. Leg segments dark at tips (Fig. 280). Spermathecae globular (Figs. 285, 287, 288) ..... ***placidus*** **Banks,** p. 87

32(30). Spermathecae expanded anteriad and posteriad (Figs. 296, 305) 33

Spermathecae not expanded anteriad or posteriad 34

33(32). Spermathecae with mesal margins straight; anterior expansion large (Figs. 305–307) ..... ***oneida*** **Levi,** p. 91

Spermathecae with mesal margins curved; anterior expansion small (Figs. 296, 297) ..... ***speciosus*** **Gertsch,** p. 90

34(32). Carapace orange or orange brown. Femur I without dark longitudinal band ..... ***rodecki*** **Gertsch & Jellison,** p. 93

Carapace mottled brown and yellow. Femur I usually with dark longitudinal band along prolateral surface (Fig. 315) ..... ***josemitensis*** **Gertsch,** p. 94

Philodromus cespitum (Walckenaer)

Figs. 68, 102–105; Map 4

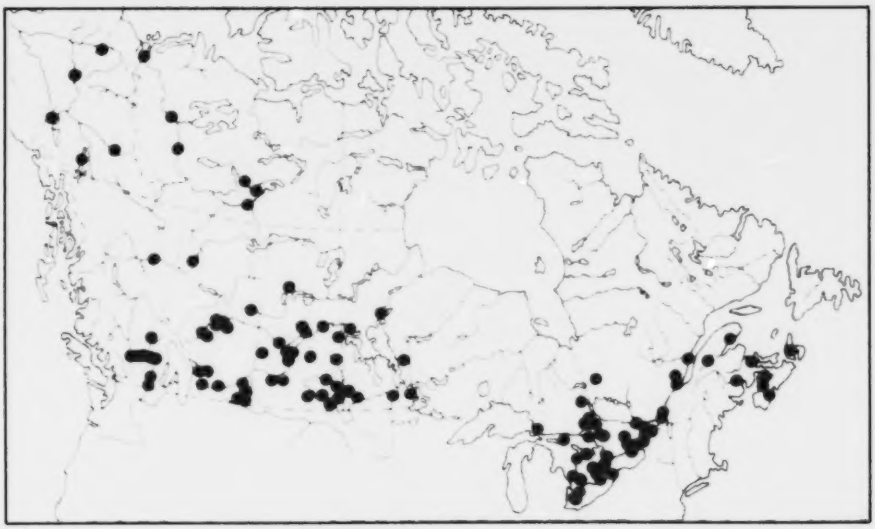
Aranea cespitum Walckenaer, 1802:230.
Philodromus cespiticolis Walckenaer, 1837:535; Dondale 1961*a*:216, figs. 6, 7, 10, 27, 40.
Philodromus maculatus Blackwall, 1846:39.
Philodromus obscurus Blackwall, 1871:431.
Philodromus canadensis Emerton, 1917:270, fig. 22 (parts 3–5).
Philodromus aureolus: Kaston 1948:436, figs. 1557–1559.
Philodromus cespitum: Dondale & Redner 1976*a*:131, figs. 1, 2, 38, 39.

Male. Total length approximately 4.40 mm; carapace 2.10 × 0.20 mm long, 2.10 × 0.19 mm wide (20 specimens measured). Carapace pale yellow brown mesad and on front, red brown laterad, with irregular white marginal band. Legs yellow. Dorsum of abdomen light brown to gray, with brown heart mark. Palpal tibia with retrolateral apophysis semierect, slightly tapered, obliquely truncate (Fig. 105); ventral apophysis (*va*) with two points (Fig. 104). Embolus arising on prolateral side of tegulum, arched around distal end of tegulum, supported on membrane; tegulum with conspicuous erect seta near resting point of embolus.

Female. Total length approximately 5.30 mm; carapace 2.10 × 0.15 mm long, 2.10 × 0.16 mm wide (20 specimens measured). General shape and color essentially as in male, but carapace with white V anterior to dorsal groove; legs speckled with brown on prolateral surfaces; abdominal dorsum with alternating white and brown chevrons. Atrium of epigynum mesally depressed at anterior end (Fig. 102). Copulatory tubes funnel-shaped; spermathecae bulbous (Fig. 103).

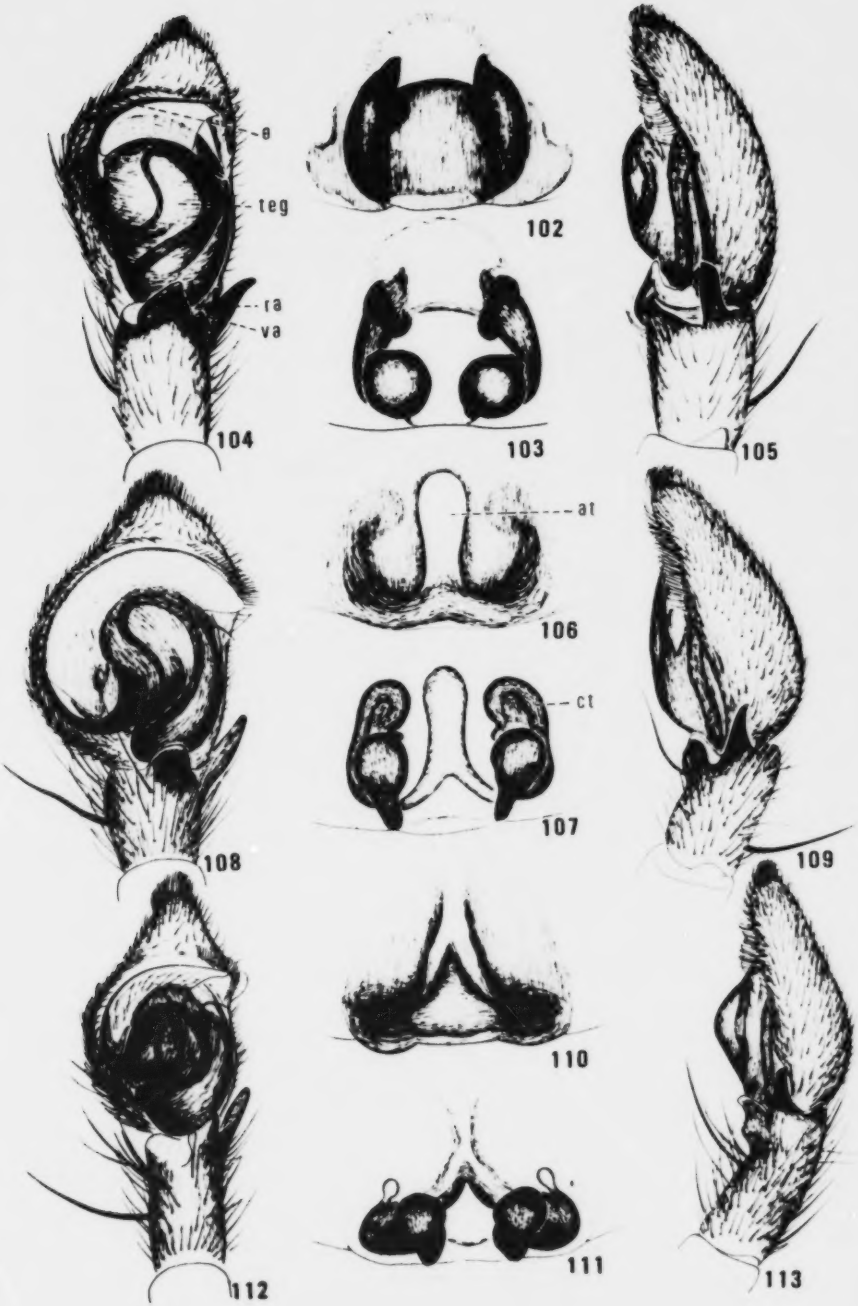
Range. Alaska to Nova Scotia, southward to California, Illinois, and New Jersey; Europe, Asia, and North Africa.

Comments. Males of *P. cespitum* are distinguished from those of other species of *Philodromus* by the tibial apophyses on the male palpus; the retrolateral apophysis is semierect, slightly tapered, and obliquely truncate, and the ventral apophysis is two-pointed. Females are unique in having a median depressed atrium at the anterior end of the epigynum and in having funnel-shaped copulatory tubes. Specimens were most often collected by beating trays and sweep nets in grasses, shrubs, and trees.



Map 4. Collection localities of *Philodromus cespitum*.

Figs. 102–113. Genitalia of *Philodromus* spp. 102–105, *P. cespitum*. 102, Epigynum; 103, Spermathecae; 104, Palpus of male, ventral view; 105, Palpus of male, retrolateral view. 106–109, *P. laticeps*. 106, Epigynum; 107, Spermathecae; 108, Palpus of male, ventral view; 109, Palpus of male, retrolateral view. 110–113, *P. lutulentus*. 110, Epigynum; 111, Spermathecae; 112, Palpus of male, ventral view; 113, Palpus of male, retrolateral view. *at*, atrium; *ct*, copulatory tube; *e*, embolus; *ra*, retrolateral apophysis; *teg*, tegulum; *va*, ventral apophysis.


e
teg
ra
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102
103
105
at
106
ct
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113

Philodromus laticeps Keyserling

Figs. 106–109; Map 5

Philodromus laticeps Keyserling, 1880:215, fig. 118 (pl. 5); Dondale & Redner 1976*a*:132, figs. 3, 4, 40, 41.
Philodromus robustus Emerton, 1892:376, figs. 1, 1*a* (pl. 32).
Philodromus louisianus Chamberlin, 1924:23, fig. 39 (pl. 5).

Male. Total length approximately 5.00 mm; carapace 1.88–2.68 mm long, 1.91–2.68 mm wide (nine specimens measured). Carapace red brown, with yellow radiating lines, and with a dark triangle anterior to dorsal groove. Legs yellow brown, with extensive red brown areas, and with minute speckling on distal two-thirds of femora and on patellae and tibiae. Dorsum of abdomen yellow anteriad, purple to black posteriad, covered with shiny scales; venter with one or three longitudinal purple bands on pale yellow background. Palpal tibia with erect slender retrolateral apophysis (Fig. 109), and with short wide ventral apophysis (Fig. 108). Embolus arising on prolateroventral margin of tegulum, supported on transparent membrane.

Female. Total length approximately 6.35 mm; carapace 2.41 $\pm$ 0.14 mm long, 2.41 $\pm$ 0.16 mm wide (20 specimens measured). General structure and color essentially as in male. Epigynum with mesally depressed atrium (*at*) and with raised transverse median septum (Fig. 106). Copulatory tubes (*ct*) curled anterior to spermathecae; spermathecae set apart by distance equal to nearly twice the width of one spermatheca (Fig. 107).

Range. Eastern Texas to Florida, northward to Massachusetts.

Comments. Specimens of *P. laticeps* closely resemble those of *P. lutulentus*. Males of *laticeps* are larger, have a longer embolus, and have a more truncate ventral apophysis on the palpal tibia. Females of *laticeps* have a wider epigynal atrium, a shorter median septum, and the copulatory tubes are much longer, with the coil lying anterior to the spermatheca. The banded venter, when developed, is also distinctive for *laticeps*. Specimens have been collected from bird nests and wasp nests.

Philodromus lutulentus Gertsch

Figs. 110–113; Map 5

Philodromus lutulentus Gertsch, 1934:24; Dondale & Redner 1976*a*: 134, figs. 5, 6, 42, 43.
Philodromus eremus Buckle, 1973:142, figs. 1–3.

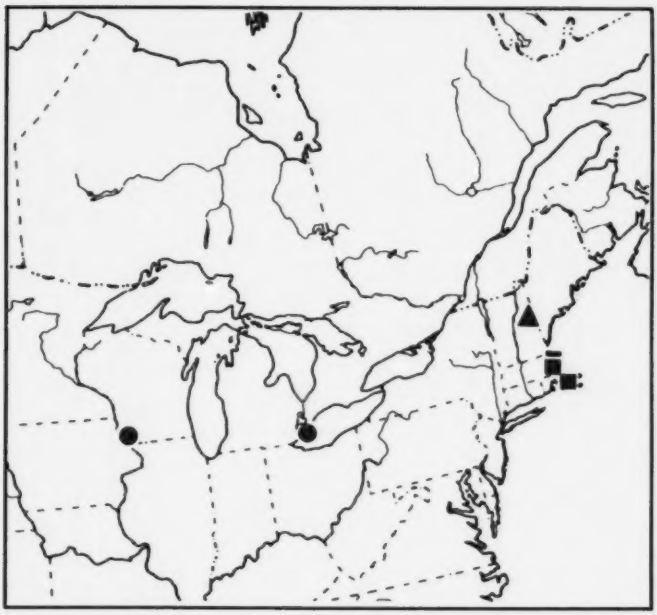
Male. Total length approximately 4.10 mm; carapace 1.79–1.85 mm long, 1.79–1.91 mm wide (three specimens measured). Carapace red brown or orange brown, with paler radiating lines anterior to dorsal groove. Legs orange brown, speckled with brown; tibiae and basitarsi III and IV with brown streak dorsally near base. Dorsum of abdomen orange purple or brown purple, covered with shiny scales; venter pale yellow. Palpal tibia

with slender oblique-tipped retrolateral apophysis (Fig. 113), and with flattened leaflike ventral apophysis (Fig. 112). Embolus arising approximately midway along prolateral margin of tegulum, supported on transparent membrane.

Female. Total length approximately 5.37 mm; carapace 2.05–2.33 mm long, 2.03–2.28 mm wide (three specimens measured). General structure and color essentially as in male. Epigynum with depressed mesal atrium and short, broad median septum (Fig. 110). Copulatory tubes short, looped laterad of spermathecae; spermathecae set apart by a distance approximately equal to the width of one spermatheca (Fig. 111).

Range. California to Georgia, northward to New Hampshire.

Comments. Specimens of *P. lutulentus* mainly resemble those of *P. laticeps*. Males differ by being smaller and by having a shorter embolus and a longer ventral apophysis on the palpal tibia. Females of *lutulentus* have a narrower epigynal atrium, a longer median septum, and shorter copulatory tubes that form only a small loop laterad of the spermathecae. The unmarked venter of *lutulentus* is also partly diagnostic. Specimens have been found in Malaise traps.



Map 5. Collection localities of *Philodromus laticeps* (■), *P. lutulentus* (▲), and *P. keyserlingi* (●).

Philodromus spectabilis Keyserling

Figs. 114–120; Map 6

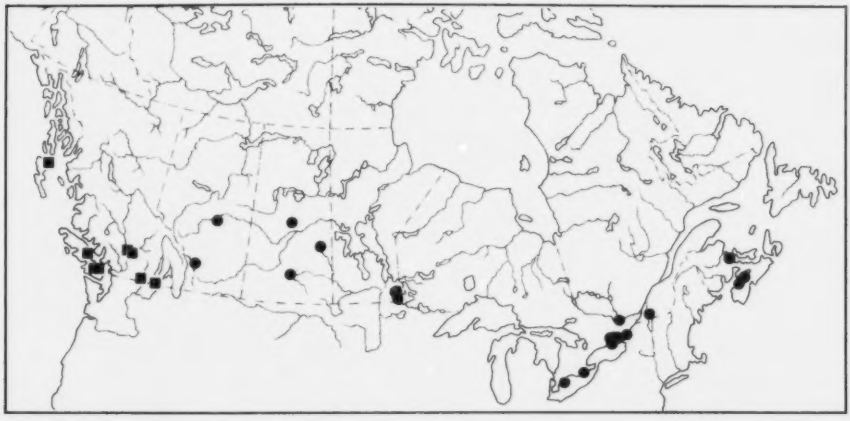
Philodromus spectabilis Keyserling, 1880:210, fig. 115 (pl. 5); Dondale & Redner 1976*a*:138, figs. 13–15, 49–52.

Male. Total length approximately 5.00 mm; carapace 2.20 ± 0.20 mm long, 2.10 ± 0.18 mm wide (14 specimens measured). Carapace off-white to brown; lateral areas streaked with brown; front and eye area very pale; median area with branched midstripe. Legs off-white to yellow, usually with large dark spots at bases of macrosetae and at tips of segments, and usually speckled with dark brown on prolateral and ventral surfaces. Dorsum of abdomen with brown heart mark, with series of chevrons crossed by a pair of dark convergent bands, and sometimes with white or bronze scales. Palpal tibia approximately twice as long as patella; retrolateral apophysis broad, truncate (Figs. 115, 116).

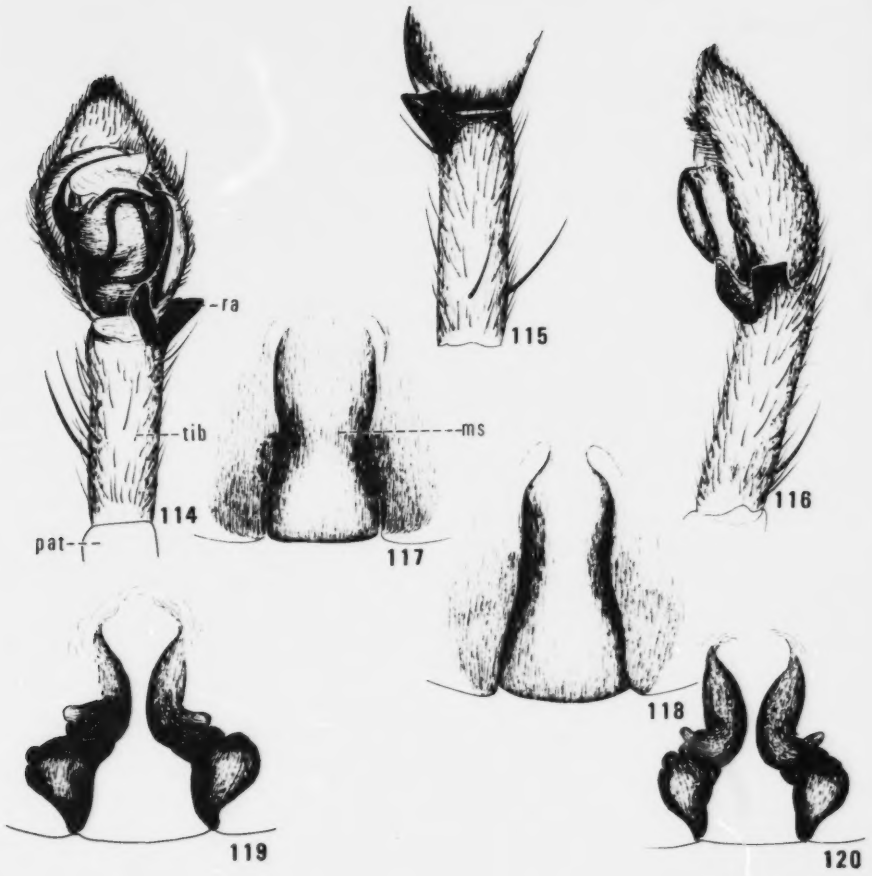
Female. Total length approximately 5.90 mm; carapace 2.50 ± 0.16 mm long, 2.40 ± 0.19 mm wide (19 specimens measured). General structure and color essentially as in male. Epigynum with median septum (*ms*) narrowed anteriad (Figs. 117, 118). Copulatory tubes saclike (Figs. 119, 120).

Range. California to New Mexico, northward to British Columbia and Montana.

Comments. Specimens of *P. spectabilis* are similar to those of *P. keyserlingi*, but can be distinguished from the latter by the truncate retrolateral apophysis on the palpal tibia of the male, and by the anteriorly narrowed median septum of the female epigynum. Specimens have been collected in wooded areas of the west.



Map 6. Collection localities of *Philodromus spectabilis* (■) and *P. vulgaris* (●).



Figs. 114–120. Genitalia of *Philodromus spectabilis*. 114, Palpus of male, ventral view; 115, Palpus of male, dorsal view; 116, Palpus of male, retrolateral view; 117 and 118, Epigynum; 119 and 120, Spermathecae. *ms*, median septum; *pat*, patella; *ra*, retrolateral apophysis; *tib*, tibia.

Philodromus keyserlingi Marx

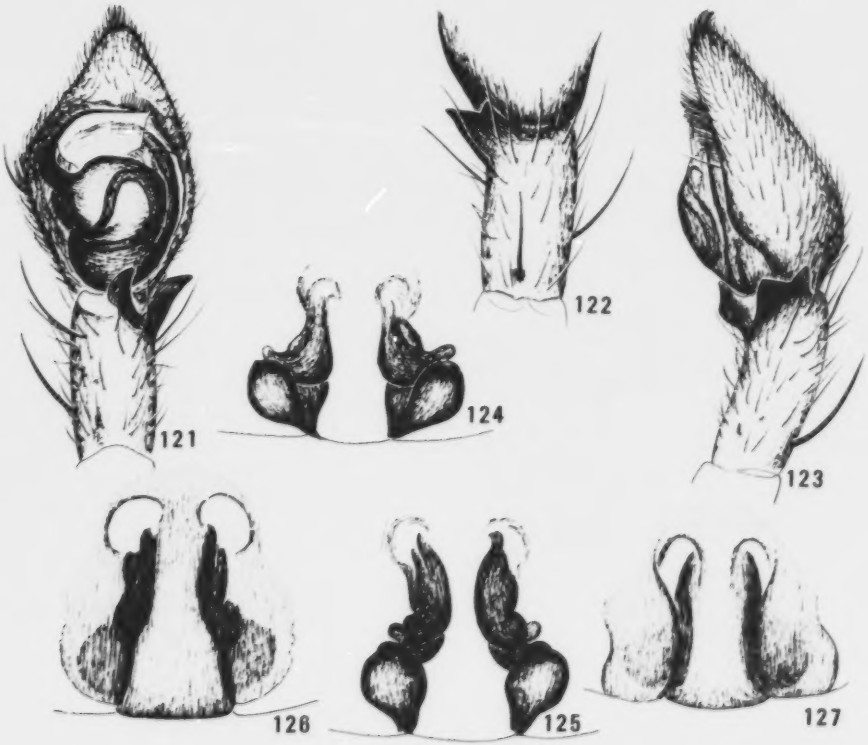
Figs. 121–127; Map 5

Philodromus obscurus Keyserling, 1884*a*:675, fig. 23 (pl. 21).

Philodromus keyserlingi Marx, 1890:559; Dondale & Redner 1976*a*: 138, figs. 19–21, 55–58 (new name for *obscurus* Keyserling, preoccupied in genus *Philodromus*).

Philodromus washita Banks, *in* Banks et al. 1932:28, figs. 1, 2.

Male. Total length approximately 4.10 mm; carapace 1.90 ± 0.10 mm long, 2.00 ± 0.20 mm wide (12 specimens measured). Carapace off-white, with lateral areas brown, and with white V and brown midstripe anterior to dorsal groove. Legs off-white, spotted with brown dorsally and ventrally. Dorsum of abdomen with indistinct heart mark, and with series of narrow chevrons often divided at midline by white stripe. Palpal tibia of male with two-pointed retrolateral apophysis (Figs. 122, 123.)



Figs. 121–127. Genitalia of *Philodromus keyserlingi*. 121, Palpus of male, ventral view; 122, Palpus of male, dorsal view; 123, Palpus of male, retrolateral view; 124 and 125, Spermathecae; 126 and 127, Epigynum.

Female. Total length approximately 5.50 mm; carapace 2.10 ± 0.10 mm long, 2.10 ± 0.22 mm wide (12 specimens measured). General structure and color essentially as in male. Epigynum with small round atrium, and with median septum somewhat hourglass-shaped (Figs. 126, 127). Copulatory tubes often boot-shaped (Figs. 124, 125).

Range. New Mexico to Florida, northward to Iowa, southern Ontario, and Massachusetts.

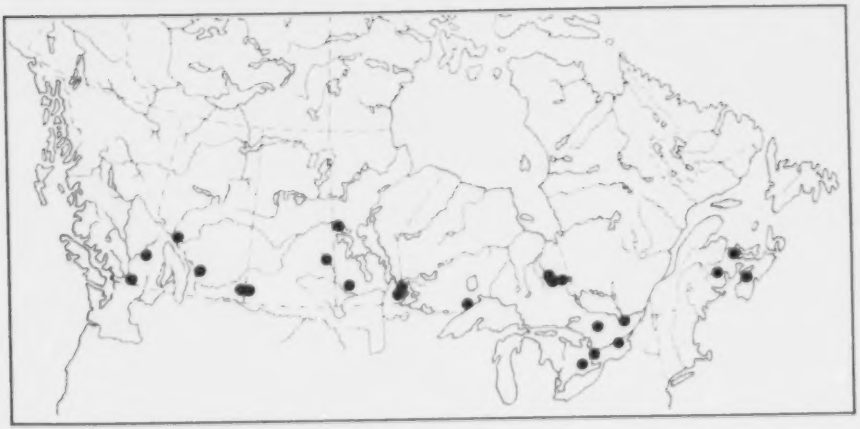
Comments. Specimens of *P. keyserlingi* resemble those of *P. spectabilis*, except for the smaller size, the bifid retrolateral apophysis on the male palpal tibia, and the small round epigynal atrium of the former. Specimens have been collected by sweep nets in wooded areas of the midwest and east.

Philodromus pernix Blackwall

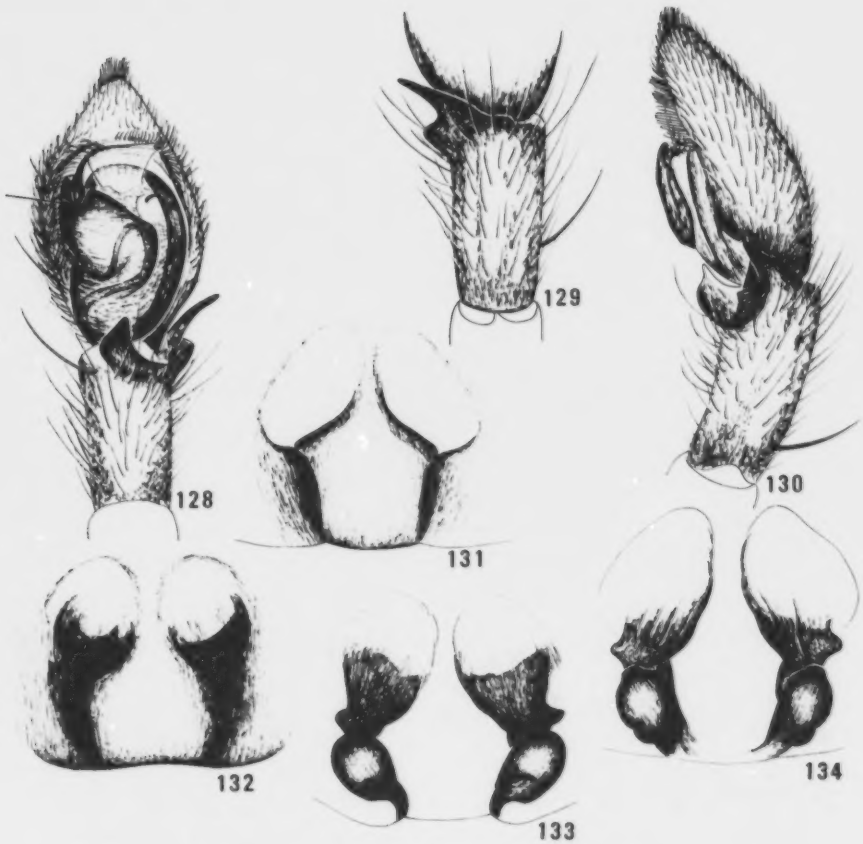
Figs. 128–134; Map 7

Philodromus pernix Blackwall, 1846:38; Dondale & Redner 1976*a*:140, figs. 22–24, 59–62.
Philodromus signifer Banks, 1892:59, fig. 20 (pl. 3).
Philodromus wyomingensis Gertsch, 1934:18, fig. 17.

Male. Total length approximately 5.20 mm; carapace 1.80–2.80 mm long, 1.83–2.77 mm wide (seven specimens measured). Carapace brown laterad, with white V and diffuse brown areas anterior to dorsal groove. Legs with large brown spots and rings near middle of femora. Dorsum of abdomen with conspicuous brown purple heart mark, and with several pairs of oblique black bars; sides of abdomen black. Palpal tibia with retrolateral apophysis a pointed prong (Figs. 129, 130). Embolus with pointed projection at base (Fig. 128).



Map 7. Collection localities of *Philodromus pernix*.



Figs. 128–134. Genitalia of *Philodromus pernix*. 128, Palpus of male, ventral view; 129, Palpus of male, dorsal view; 130, Palpus of male, retrolateral view; 131 and 132, Epigynum; 133 and 134, Spermathecae.

Female. Total length approximately 7.40 mm long; carapace 2.90 ± 0.34 mm long, 2.90 ± 0.34 mm wide (18 specimens measured). General structure and color essentially as in male. Epigynum with posterior part of median septum approximately as broad as long (Figs. 131, 132). Spermathecae as in Figs. 133, 134.

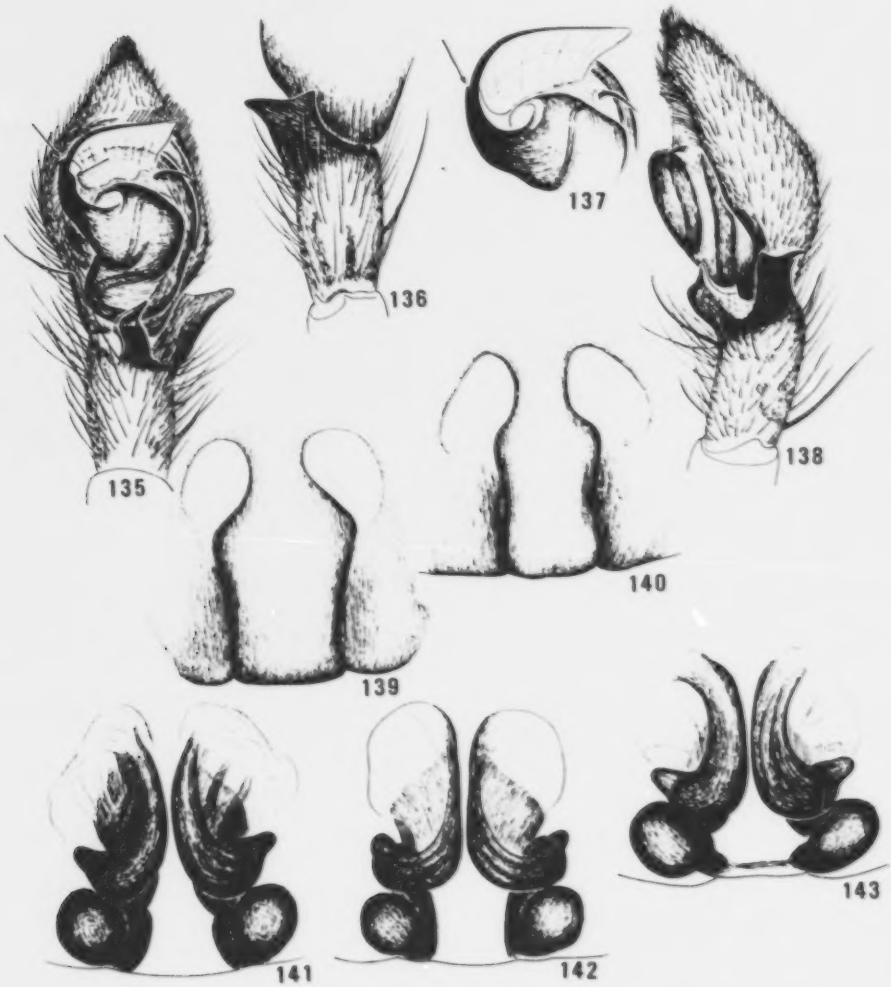
Range. British Columbia to Nova Scotia, southward to Arizona and Pennsylvania.

Comments. The stout hollowed projection at the base of the embolus of males and the short median septum of females distinguish individuals of *P. pernix* from those of *P. vulgaris*, *P. californicus*, and *P. praelustris*. Specimens have been found on conifers.

Philodromus vulgaris (Hentz)

Figs. 135–143; Map 6

Thomisus vulgaris Hentz, 1847:444, fig. 1 (pl. 23).
Philodromus gracilis Banks, 1892:60, fig. 21 (pl. 3).
Philodromus vulgaris: Dondale & Redner 1976*a*:140, figs. 25–28, 63–67.



Figs. 135–143. Genitalia of *Philodromus vulgaris*. 135, Palpus of male, ventral view; 136, Palpus of male, dorsal view; 137, Embolus of male, ventral view; 138, Palpus of male, retrolateral view; 139 and 140, Epigynum; 141–143, Spermathecae.

Male. Total length approximately 6.00 mm; carapace 1.08–3.08 mm long, 2.56–3.04 mm wide (seven specimens measured). Carapace with brown gray lateral areas and front; pale median area with narrow brown midstripe. Legs white, minutely speckled with brown, and with larger brown spots at base of macrosetae. Dorsum of abdomen diffuse brown purple; venter often with three or four indistinct longitudinal bands. Palpal tibia with broad nearly truncate retrolateral apophysis that usually hooks at dorsal angle (Figs. 136, 138). Embolus thickened near base on outer side of curve (Figs. 135, 137).

Female. Total length approximately 6.60 mm; carapace 2.80 ± 0.29 mm long, 2.90 ± 0.29 mm wide (12 specimens measured). General structure and color essentially as in male. Epigynum with median septum strongly narrowed anteriad (Figs. 139, 140). Copulatory tubes usually slender and smoothly curved, with deep fold along dorsal surface; spermathecae with prominent spermathecal organ (Figs. 141–143).

Range. Texas and Oklahoma, eastward to Florida, northward to Alberta, Saskatchewan, southern Ontario, and Nova Scotia.

Comments. The broad nearly truncate retrolateral apophysis on the male palpal tibia, the placement of the embolar swelling, and the deep fold along the dorsal surface of the female copulatory tube distinguish individuals of *P. vulgaris* from those of *P. pernix*, *P. californicus*, and *P. praelustris*. Specimens have been collected from tree trunks, wooden buildings, fences, and occasionally coniferous foliage.

Philodromus californicus Keyserling

Figs. 144–152; Map 8

Philodromus californicus Keyserling, 1884*a*:676, fig. 24 (pl. 21); Dondale & Redner 1976*a*: 142, figs. 29–34, 68–70.

Philodromus hoples Chamberlin, *in* Chamberlin & Gertsch, 1928:181.

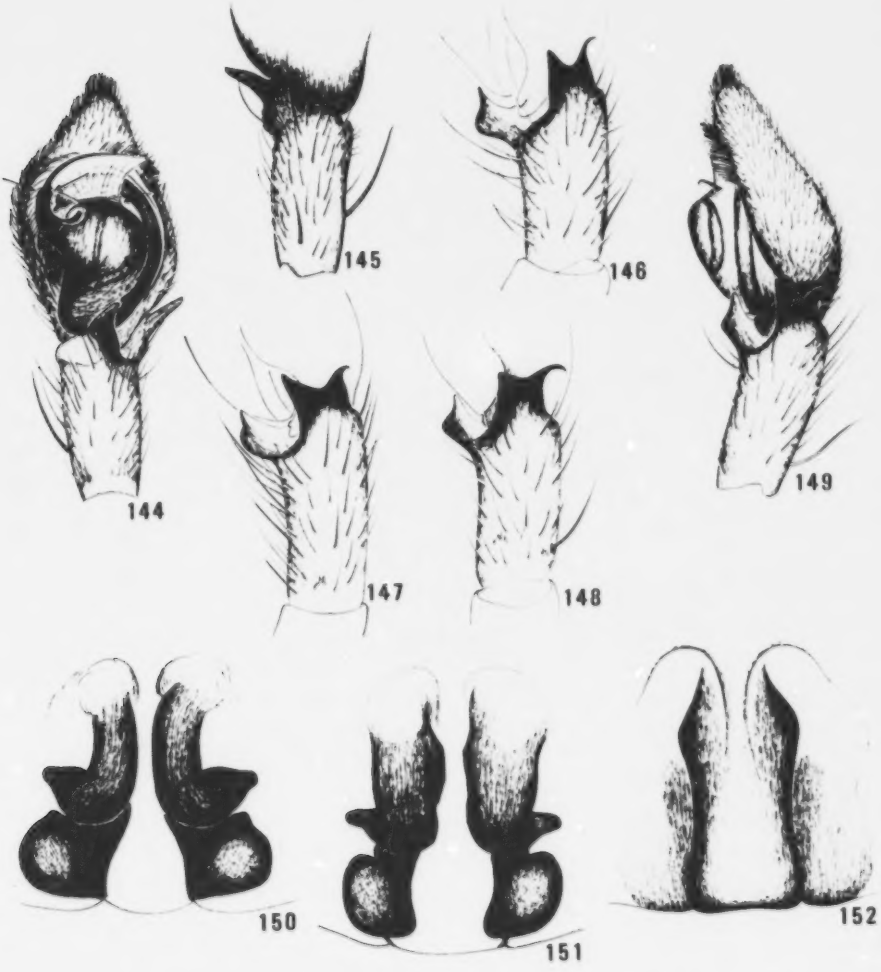
Philodromus agreutes Schick, 1965:47, figs. 32, 33.

Male. Total length approximately 6.11 mm; carapace 2.70 ± 0.30 mm long, 2.60 ± 0.27 mm wide (13 specimens measured). Carapace pale brown to dark brown, gray brown, or green brown, with pale median area extending over front and enclosing white V anterior to dorsal groove. Legs off-white, with small brown spots at bases of macrosetae, and with smaller elongate spots scattered over prolateral and ventral surfaces. Dorsum of abdomen with distinct heart mark, with series of narrow chevrons, and sometimes with white or colored scales. Palpal tibia with deeply indented retrolateral apophysis that is longer than wide and usually armed with a blunt ventral point and a hooked dorsal point (Figs. 145–149). Embolus with slight angularity on outer side of curve and small swelling on inner side (Fig. 144).

Female. Total length approximately 8.20 mm; carapace 3.10 ± 0.30 mm long, 3.20 ± 0.30 mm wide (18 specimens measured). General structure and color essentially as in male. Epigynum with median septum narrowed

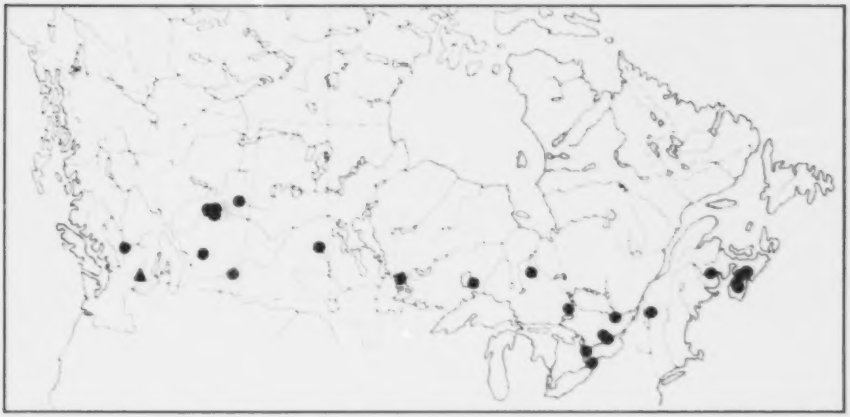
anteriad (Fig. 152). Copulatory tubes of approximately same width throughout; spermathecae with prominent spermathecal organ (Figs. 150, 151).

Range. Northern Mexico and California to British Columbia, eastward to New Mexico and Colorado.



Figs. 144–152. Genitalia of *Philodromus californicus*. 144, Palpus of male, ventral view; 145, Palpus of male, dorsal view; 146–148, Palpal tibia of male, retrolateral view; 149, Palpus of male, retrolateral view; 150 and 151, Spermathecae; 152, Epigynum.

Comments. The deeply indented retrolateral apophysis on the male palpal tibia and the uniform width of the copulatory tubes in the female distinguish specimens of *P. californicus* from those of *P. vulgaris*, *P. praelustris*, and similar species. Specimens have been collected from oak and under loose bark of various deciduous trees.



Map 8. Collection localities of *Philodromus californicus* (▲) and *P. praelustris* (●).

Philodromus praelustris Keyserling

Figs. 153–158; Map 8

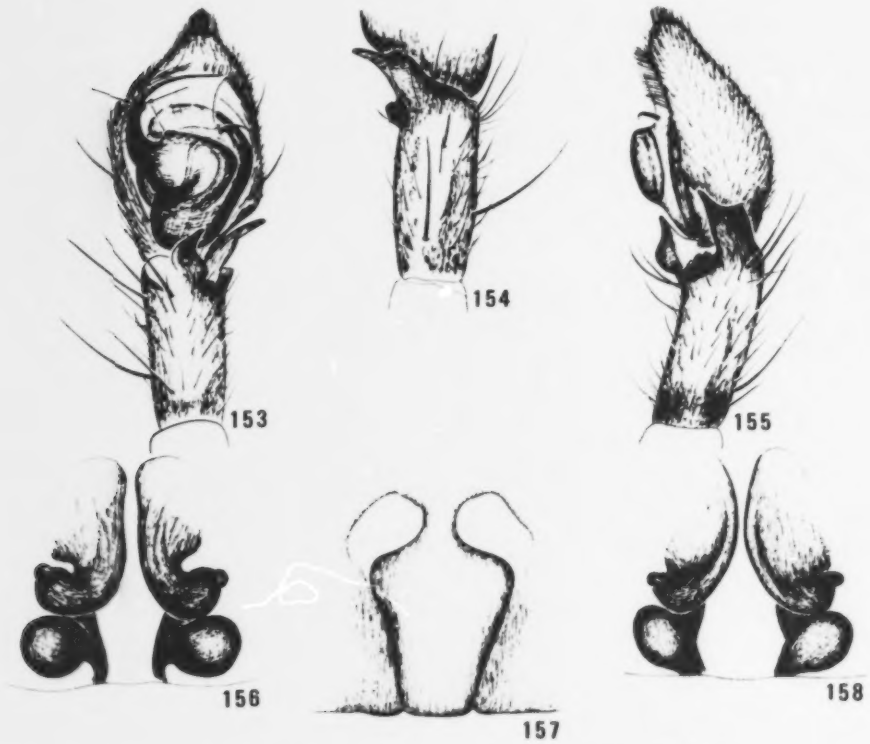
Philodromus praelustris Keyserling, 1880:209, fig. 114 (pl. 5); Dondale & Redner 1976*a*:145, figs. 35–37, 71–73.
Philodromus expositus Keyserling, 1880:220, fig. 121 (pl. 5).

Male: Total length approximately 5.90 mm; carapace 2.40–3.20 mm long, 2.55–3.25 mm wide (seven specimens measured). Carapace with lateral areas dark gray to black; median area and front off-white. Legs off-white, with dark rings at tips of segments, and often with fine elongate spots. Dorsum of abdomen with dark heart mark, and with series of dark chevrons; venter pale. Palpal tibia with slender shallowly indented retrolateral apophysis that is toothed along dorsal margin (Figs. 154, 155). Embolus with inner and outer swellings situated at same level (Fig. 153).

Female. Total length approximately 8.00 mm; carapace 3.20 ± 0.32 mm long, and 3.30 ± 0.29 mm wide (12 specimens measured). General structure and color essentially as in male. Epigynum with median septum narrowed anteriad (Fig. 157). Copulatory tubes short, broad, tapered; spermathecae with prominent spermathecal organs (Figs. 156, 158).

Range. British Columbia to Nova Scotia, southward to Nevada and Virginia.

Comments. The retrolateral apophysis on the palpal tibia is variable in male *P. praelustris*, but is never truncate like that of male *P. vulgaris*, or as deeply indented as in male *P. californicus*. Females have copulatory tubes more curved and less cylindrical than those of female *californicus*. Specimens of *praelustris* have been collected from tree trunks and branches, and on wooden fences and buildings.



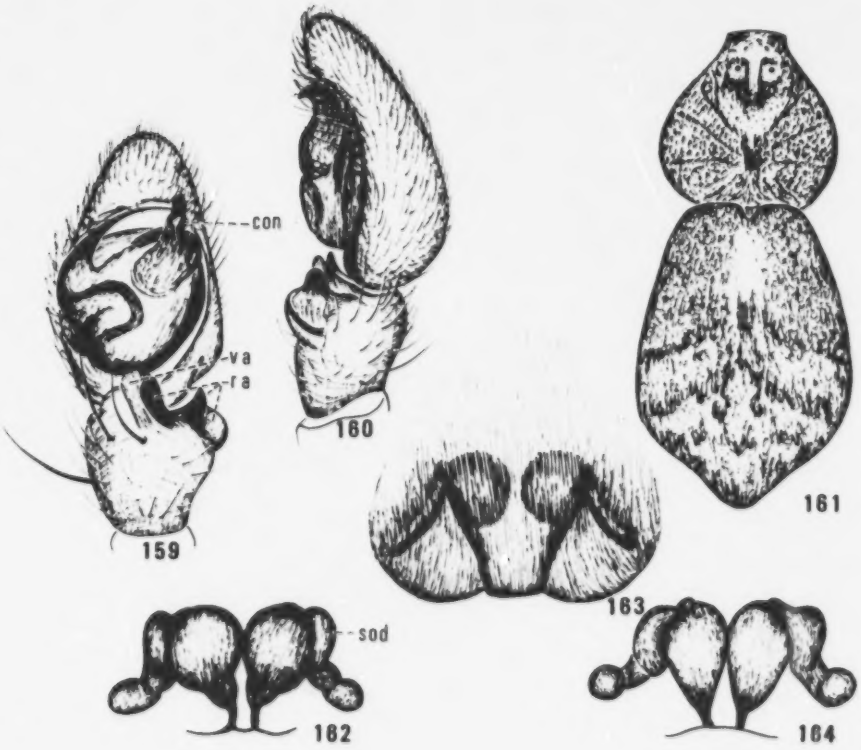
Figs. 153–158. Genitalia of *Philodromus praelustris*. 153, Palpus of male, ventral view; 154, Palpus of male, dorsal view; 155, Palpus of male, retrolateral view; 156 and 158, Spermathecae; 157, Epigynum.

Philodromus infuscatus infuscatus Keyserling

Figs. 159–164; Map 9

Philodromus infuscatus Keyserling, 1880:222, fig. 122 (pl. 5).
Philodromus unicolor Banks, 1892:61, fig. 22 (pl. 3).
Philodromus macrotarsus Emerton, 1917:271, fig. 22.
Philodromus utus Chamberlin, 1921:245, fig. 6 (pl. 10).
Philodromus infuscatus infuscatus: Dondale & Redner 1969:929, figs. 11, 12, 48–50, 83.

Male. Total length approximately 4.00 mm; carapace 1.63 ± 0.19 mm long, 1.62 ± 0.14 mm wide (24 specimens measured). Carapace gray, finely speckled with red brown, and with dark lateral margins and white V anterior



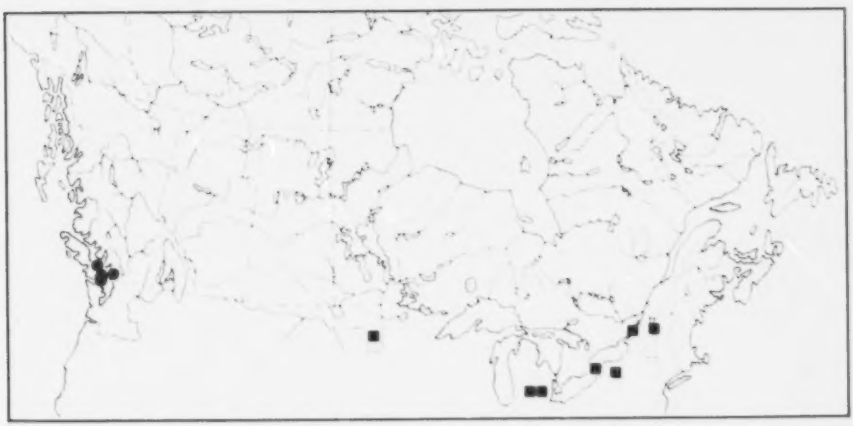
Figs. 159–164. Structures of *Philodromus infuscatus infuscatus*. 159, Palpus of male, ventral view; 160, Palpus of male, retrolateral view; 161, Body of female; 162 and 164, Spermathecae; 163, Epigynum. *con*, conductor; *ra*, retrolateral apophysis; *sod*, spermathecal organ duct; *va*, ventral apophysis.

to dorsal groove. Legs yellow, with dull red spots at bases of macrosetae and with fine speckling along prolateral surfaces. Dorsum of abdomen speckled, with purple heart mark, and sometimes with series of indistinct chevrons. Palpal tibia with large retrolateral apophysis (*ra*) that has a distinct tooth near base on prolateral side; ventral piece of apophysis appressed to ventral apophysis (*va*) (Figs. 159, 160); conductor (*con*) stout, sclerotized (Fig. 159).

Female. Total length approximately 4.40 mm; carapace 1.85 ± 0.19 mm long, 1.87 ± 0.20 mm wide (17 specimens measured). General structure and color (Fig. 161) essentially as in male. Epigynum with median septum tapered posteriad (Fig. 163). Spermathecal organ ducts unusually long (Figs. 162, 164).

Range. Texas to Florida, northward to North Dakota, southern Ontario, and New England.

Comments. The gray speckled carapace, two-piece retrolateral apophysis, stout sclerotized conductor, posteriorly tapered median septum, and elongate spermathecal organ ducts distinguish specimens of *P. infuscatus* from those of all other species of *Philodromus* in Canada. The eastern form found in southern Ontario is *P. infuscatus infuscatus* Keyserling, which intergrades with *P. infuscatus utus* Chamberlin in western and southwestern United States. The habitat is unrecorded.



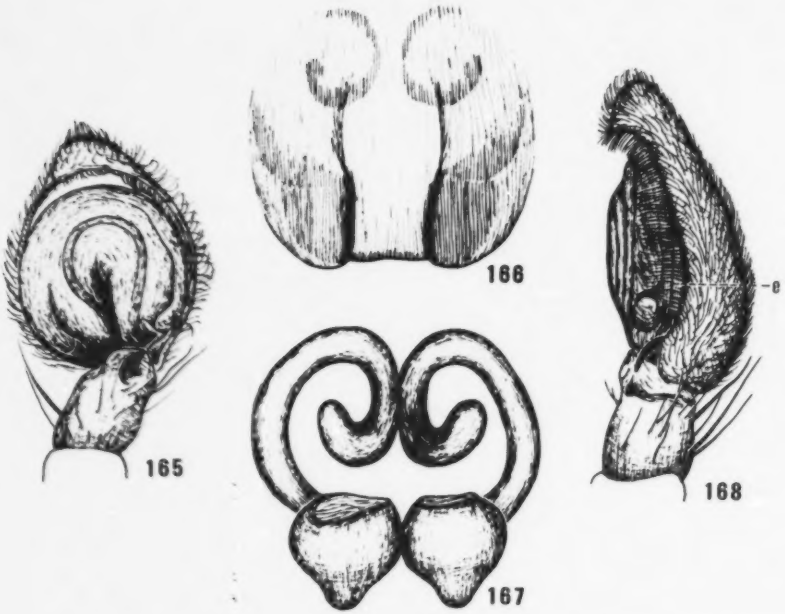
Map 9. Collection localities of *Philodromus infuscatus infuscatus* (■) and *P. dispar* (●).

Philodromus dispar Walckenaer

Figs. 165–168; Map 9

Philodromus dispar Walckenaer, 1826:89; Dondale & Redner 1969: 944, figs. 35, 36, 79, 80.
Philodromus limbatus Sundevall, 1832:228.

Male. Total length approximately 4.00 mm; carapace 1.90 ± 0.05 mm long, 1.79 ± 0.04 mm wide (18 specimens measured). Carapace pale red brown to dark red brown, paler along midline, on front, and at lateral margins, and with pale V anterior to dorsal groove. Legs yellow brown, speckled with dark brown, and with off-white spots dorsally on coxae and trochanters. Dorsum of abdomen various shades of brown, purple, or red, darker at margins, with indistinct heart mark, and with series of dark interrupted chevrons. Palpal tibia without retrolateral apophysis, with short hollowed ventral apophysis (Fig. 168). Tegulum nearly circular, with long fine embolus lying along its periphery (Fig. 165).



Figs. 165–168. Genitalia of *Philodromus dispar*. 165, Palpus of male, ventral view; 166, Epigynum; 167, Spermathecae; 168, Palpus of male, retrolateral view. *e*, embolus.

Female. Total length approximately 5.00 mm; carapace 1.94 ± 0.13 mm long, 1.82 ± 0.13 mm wide (11 specimens measured). General structure and color essentially as in male, but dorsum of abdomen often paler, being off-white, with darker heart mark and chevrons. Epigynum with median septum angulate at sides (Fig. 166). Copulatory tubes not visible in dorsal view; spermathecae with long coiled spermathecal organ ducts (Fig. 167).

Range. British Columbia and Washington, where the species is probably introduced; Europe and Asia.

Comments. The reddish body, circular tegulum, long fine embolus, and coiled spermathecal organ ducts distinguish specimens of *P. dispar* from those of all other species of *Philodromus* in Canada. Specimens have been collected from trees and shrubs by sweep nets.

Philodromus histrio (Latreille)

Figs. 66, 169–183; Map 10

Thomisus histrio Latreille, 1819:36.
Philodromus elegans Blackwall, 1859:92.
Philodromus decorus Westring, 1861:459.
Philodromus virescens Thorell, 1877:500.
Philodromus clarus Keyserling, 1880:214, figs. 117, 117*a*.
Philodromus lentiginosus Keyserling, 1882:312.
Philodromus crenifer Chamberlin, *in* Chamberlin & Gertsch 1928:181.
Philodromus histrio: Dondale & Redner 1975*a*:373, figs. 10–25.

Male. Total length approximately 5.00 mm; carapace 2.26 ± 0.20 mm long, 2.11 ± 0.19 mm wide (20 specimens measured). Carapace yellow, white, or brown, with front and lateral areas mottled gray. Legs gray, finely speckled with brown, and with two orange bands along dorsal surface (similar band may be present along retrolateral surface). Dorsum of abdomen gray green, with distinct gray or green heart mark, and with series of alternating yellow and gray chevrons; sides streaked with light brown. Palpal tibia with short pointed retrolateral apophysis, without ventral apophysis (Fig. 169). Embolus flat, slightly curved (Figs. 169–174).

Female. Total length approximately 6.25 mm; carapace 2.45 ± 0.30 mm long, 2.32 ± 0.26 mm wide (20 specimens measured). General structure and color essentially as in male. Epigynum with broad atrium that narrows to width of median septum in posterior half of epigynum (Figs. 176–179). Copulatory tubes funnellike; spermathecae approximately triangular in outline (Figs. 180–183).

Range. Southern British Columbia to Nova Scotia, southward to Mexico; Europe.

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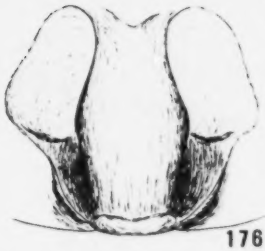
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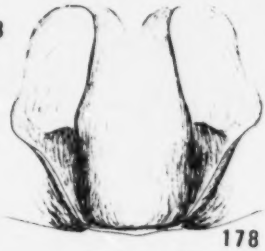
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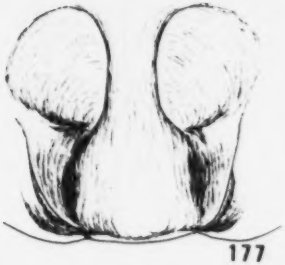
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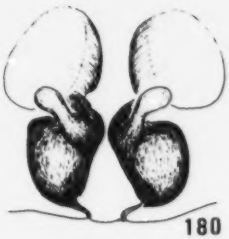
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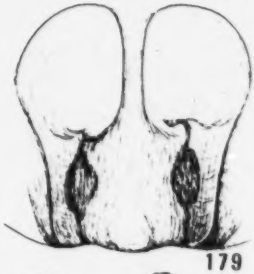
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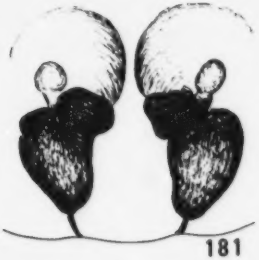
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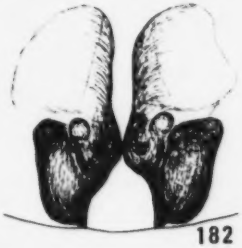
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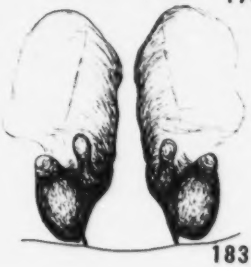
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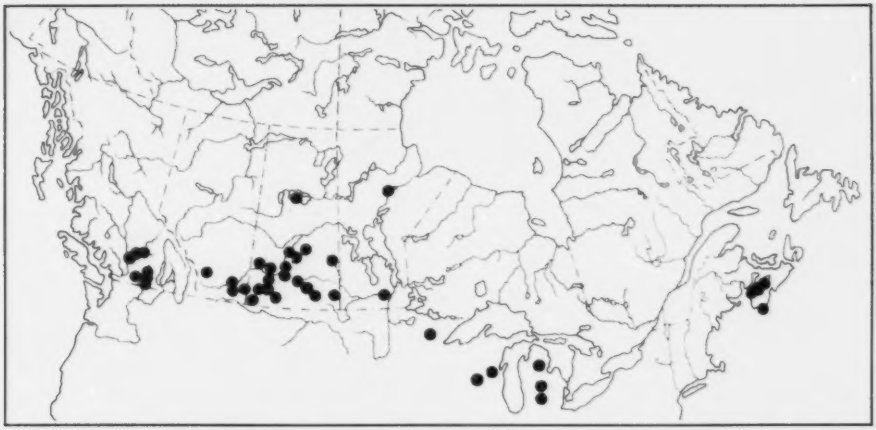


Map 10. Collection localities of *Philodromus histrio*.

Figs. 169–183. Genitalia of *Philodromus histrio*. 169–174, Palpus of male, ventral view; 175, Palpus of male, retrolateral view; 176–179, Epigynum; 180–183, Spermathecae.

Comments. The body and legs in specimens of *P. histrio* are distinctively mottled and striped with gray, green, and other colors. The short pointed retrolateral apophysis on the male palpal tibia and the angular spermathecae of the female distinguish specimens of *P. histrio* from those of *P. mysticus* and *P. alascensis*. *P. histrio* has been swept from sagebrush in the west and from heath plants, weeds, and tall grasses east of the Rocky Mountains.

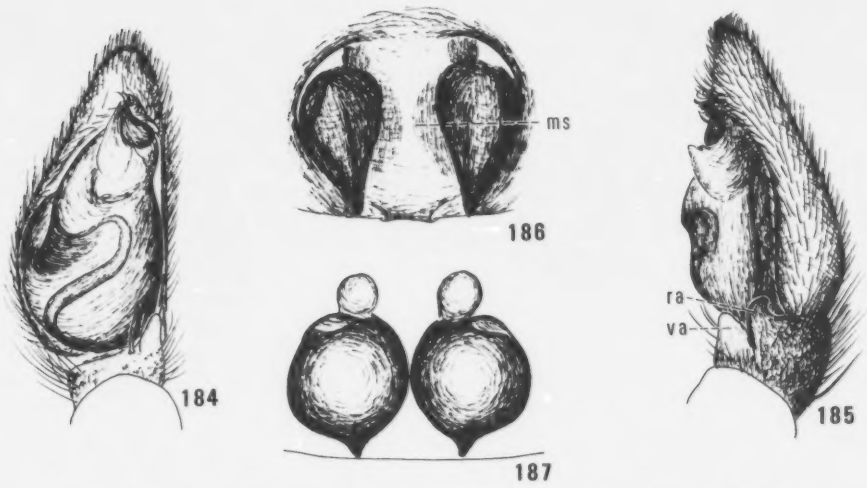
Philodromus mysticus Dondale & Redner

Figs. 184–187; Map 11

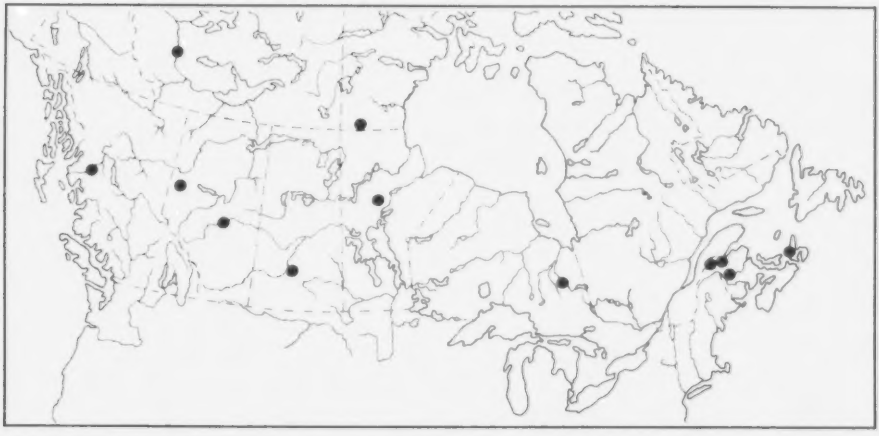
Philodromus mysticus Dondale & Redner, 1975*a*:377, figs. 26–29.

Male. Total length approximately 4.50 mm; carapace 1.79–2.27 mm long, 1.82–2.23 mm wide (nine specimens measured). Carapace orange brown on yellow background, sometimes with yellow V posterior to posterior row of eyes. Legs pale orange brown, sometimes with pale rings near base of femora and at middle of femora and tibiae. Dorsum of abdomen blue gray, with broad gray brown heart mark, and with series of interrupted chevrons. Palpal tibia with retrolateral and ventral apophyses approximately equal in length and set close together (Figs. 184, 185). Embolus broad, rather flat, partly hidden by collarlike process on tegulum (Fig. 184).

Female. Total length approximately 6.00 mm; carapace 2.31 ± 0.10 mm long, 2.25 ± 0.09 mm wide (11 specimens measured). General structure and color essentially as in male. Epigynum with median septum (*ms*) occupying anterior half of atrium (Fig. 186). Spermathecae nearly round in outline (Fig. 187).



Figs. 184–187. Genitalia of *Philodromus mysticus*. 184, Palpus of male, ventral view; 185, Palpus of male, retrolateral view; 186, Epigynum; 187, Spermathecae. *ms*, median septum; *ra*, retrolateral apophysis; *va*, ventral apophysis.



Map 11. Collection localities of *Philodromus mysticus*.

Range. District of Mackenzie, N.W.T., to Nova Scotia, southward to Utah and Colorado.

Comments. *P. mysticus* adults resemble those of *P. alascensis* in size and color. The collarlike structure on the tegulum of the male palpus and the broad median septum that occupies a large part of the epigynal atrium in females distinguish specimens of *mysticus*. A few specimens were collected on the ground or on buildings, but most were collected from black spruce, white spruce, or balsam fir.

Philodromus alascensis Keyserling

Figs. 188–198; Map 12

Philodromus inquisitor Thorell, 1877:502.

Philodromus alascensis Keyserling, 1884*a*:674, fig. 22; Dondale & Redner 1975*a*:379, figs. 30–40.

Philodromus thorelli Marx, 1890:559 (new name for *inquisitor* Thorell, preoccupied in genus *Philodromus*).

Philodromus varians Kulczynski, 1908:57, figs. 71–74, 77, 78, 80.

Philodromus ubiquitor Mello-Leitão, 1929:270 (new name for *thorelli* Marx, preoccupied in genus *Philodromus*).

Rhysodromus alascensis dondalei Schick, 1965:73, figs. 90–92.

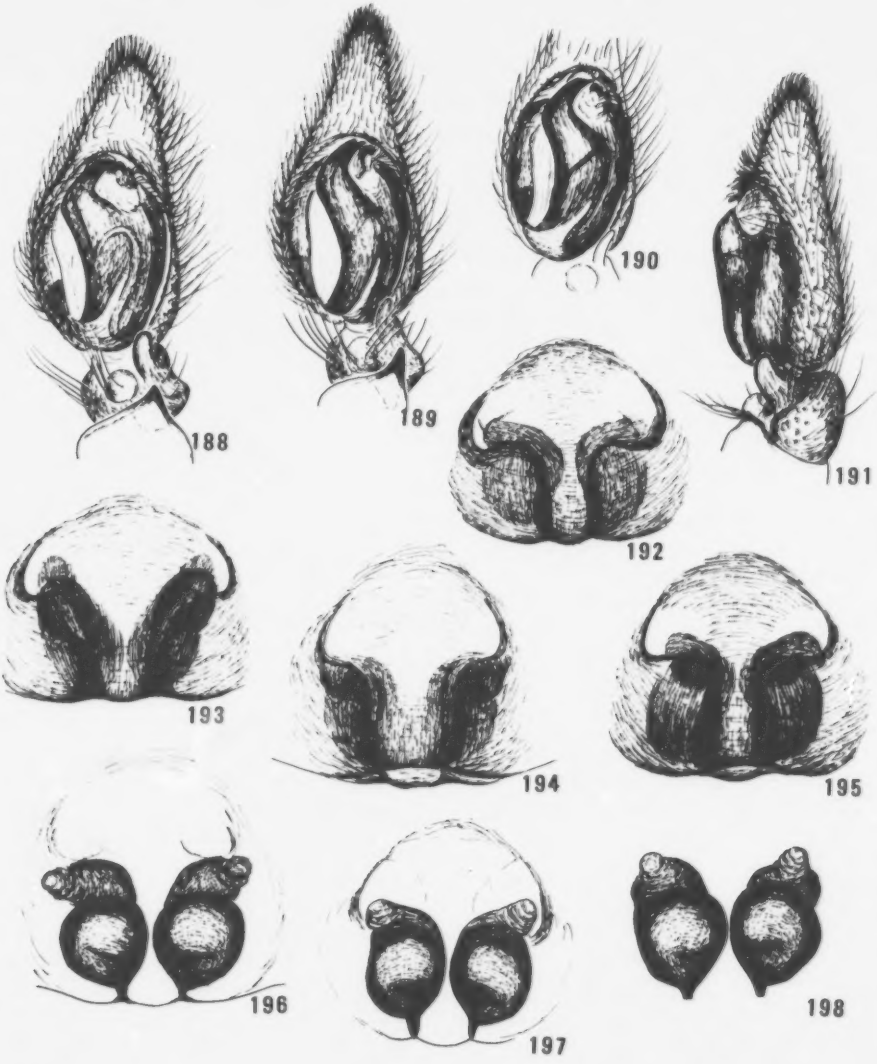
Male. Total length approximately 4.75 mm; carapace 2.11 ± 0.13 mm long, 2.06 ± 0.13 mm wide (20 specimens measured). Carapace orange brown, with front, median area, and to lesser degree, lateral areas mottled with yellow; lateral areas reticulated with black. Legs orange brown, with yellow rings at base and beyond middle of femora, with indistinct brown longitudinal bands along dorsal and retrolateral surfaces, and sometimes finely speckled with brown ventrally. Dorsum of abdomen off-white to green gray, with dark heart mark, and with series of chevrons; sides spotted and streaked with brown. Palpal tibia with short stout retrolateral apophysis, and with plump ventral apophysis (Figs. 188–191); palpal patella with small apophysis. Embolus arising near midline of palpus (Figs. 188–190).

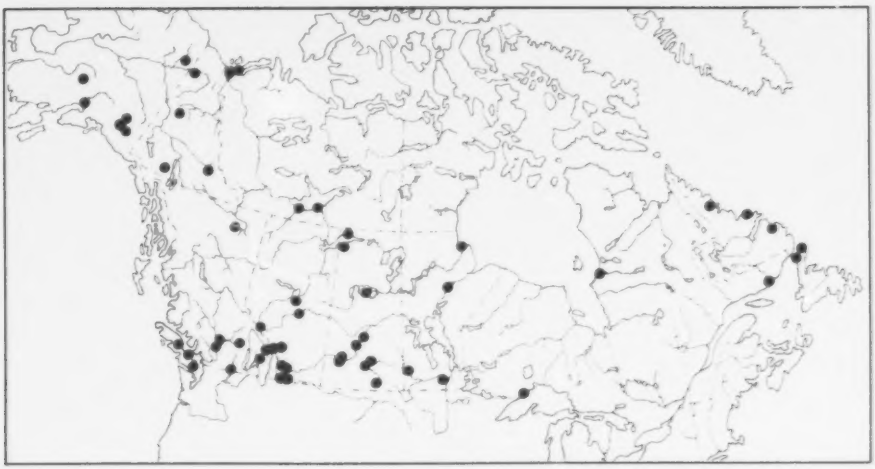
Female. Total length approximately 5.75 mm; carapace 2.24 ± 0.10 mm long, 2.18 ± 0.14 mm wide (20 specimens measured). General structure and color essentially as in male. Epigynum with median septum undivided, restricted to posterior half (Figs. 192–195). Spermathecae broadly oval, close together, with broad spermathecal organ duct at anterior end (Figs. 196–198).

Range. Alaska to Newfoundland, southward to Arizona and New Mexico; Siberia.

Comments. The best characteristics to distinguish adults of *P. alascensis* from those of *P. histrio* are the origin of the male embolus near the midline of the palpus, the more complicated apophyses on the male palpus,

and the undivided epigynal atrium of *alascensis*. *P. alascensis* adults closely resemble those of *mysticus* in color, but differ from them by having a plump ventral apophysis on the male palpal tibia, an undivided epigynal atrium, and oval rather than round spermathecae. Specimens of *alascensis* have been collected in disintegrating ground cover in forests; on sand dunes, beaches, and roadways; on snow, under rocks and logs; and in or on tents, cabins, barns, and houses.





Map 12. Collection localities of *Philodromus alascensis*.

Figs. 188–198. Genitalia of *Philodromus alascensis*. 188–190, Palpus of male, ventral view; 191, Palpus of male, retrolateral view; 192–195, Epigynum; 196–198, Spermathecae.

Philodromus marxi Keyserling

Figs. 199–205; Map 13

Philodromus marxii Keyserling, 1884*a*:677, fig. 25 (pl. 21); Dondale & Redner 1968:12, figs. 8–10, 105–107, 205.

Philodromus ornatus Banks, 1892:61, figs. 24, 24*a* (pl. 3).

Philodromus minusculus Banks, 1892:63, fig. 39 (pl. 2).

Philodromus banksi Mello-Leitão, 1929:267 (new name for *ornatus* Banks, preoccupied in genus *Philodromus*).

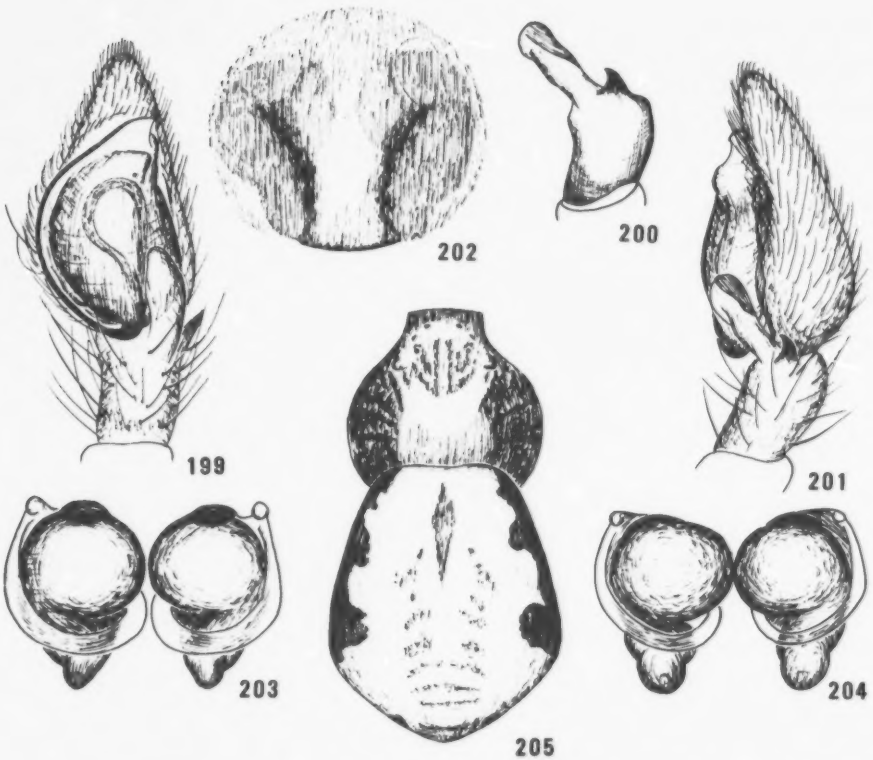
Male. Total length approximately 2.70 mm; carapace 1.57 ± 0.08 mm long, 1.56 ± 0.08 mm wide (18 specimens measured). Carapace dull red to orange, with thin layer of shiny scales, and with white V anterior to dorsal groove. Legs yellow to light orange. Dorsum of abdomen light brown, with layer of shiny scales. Palpal tibia with short-pointed retrolateral apophysis, and with longer flattened ventral apophysis (Figs. 199–201). Embolus arising at base of tegulum (Fig. 199).

Female. Total length approximately 3.20 mm; carapace 1.51 ± 0.09 mm long, 1.47 ± 0.09 mm wide (18 specimens measured). General structure and color essentially as in male, but body lacking scales; carapace with white V anterior to dorsal groove; legs with indistinct dark rings at middle and tips

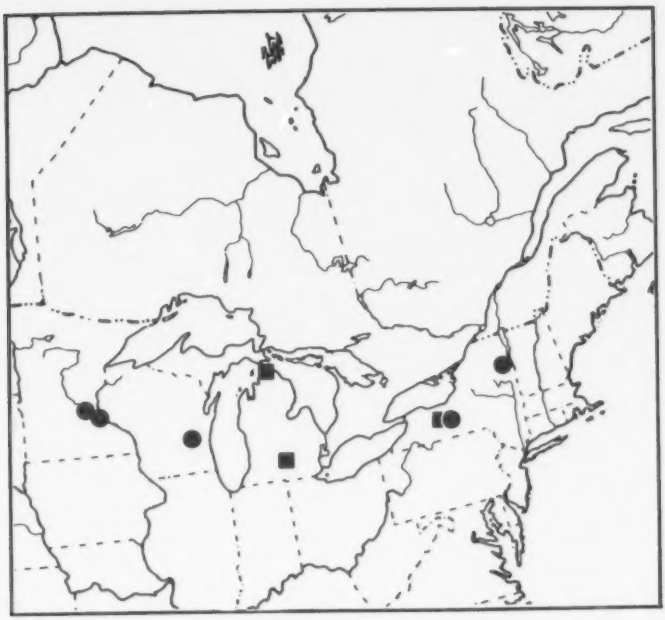
of femora; and dorsum of abdomen off-white with heart mark, with a few indistinct chevrons, and with brown sides (Fig. 205). Epigynum with median septum tapered posteriad (Fig. 202). Copulatory tubes looped once around spermathecae (Figs. 203, 204).

Range. Texas to Florida, northward to Minnesota, Michigan, northern New York, and Massachusetts.

Comments. Specimens superficially resemble those of *P. placidus*, but differ from them by having a longer, thinner embolus in the male and long copulatory tubes that make one loop around the spermathecae in females. Specimens of *P. marxi* have been collected by sweep nets in grasses and shrubs.



Figs. 199–205. Structures of *Philodromus marxi*. 199, Palpus of male, ventral view; 200, Palpal tibia of male, retrolateral view; 201, Palpus of male, retrolateral view; 202, Epigynum; 203 and 204, Spermathecae; 205, Body of female.



Map 13. Collection localities of *Philodromus marxi* (●) and *P. minceri* (■).

Philodromus imbecillus Keyserling

Figs. 206–213; Map 14

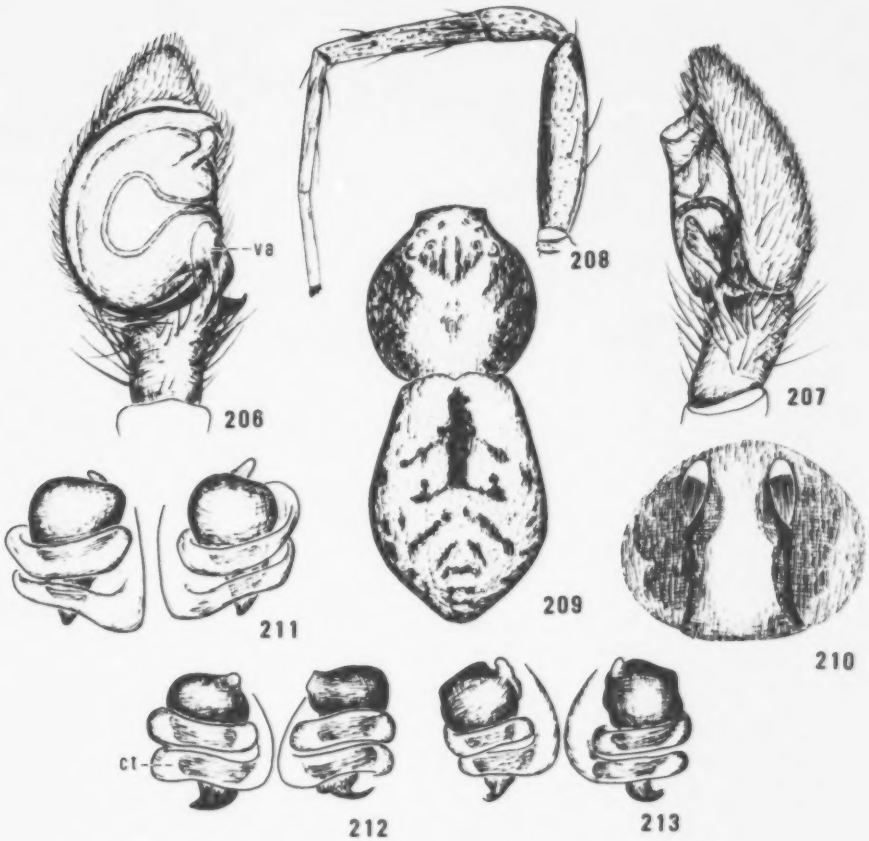
Philodromus imbecillus Keyserling, 1880:224, fig. 123 (pl. 5); Dondale & Redner 1968:7, figs. 1, 2, 93–96, 210, 222.
Philodromus lineatus Emerton, 1892:374, figs. 4–4c (pl. 31).
Philodromus carolinus Banks, 1911:452, figs. 14, 16 (pl. 25).

Male. Total length approximately 3.40 mm; carapace 1.66 ± 0.10 mm long, 1.61 ± 0.09 mm wide (20 specimens measured). Carapace orange yellow to orange brown. Legs orange yellow, often finely speckled with brown or black, with indistinct longitudinal band on prolateral surface. Dorsum of abdomen off-white with brown or purple heart mark, mottled, with four or five brown chevrons, and with layer of shiny scales; venter pale with pale brown median band. Palpal tibia with short hooked retrolateral apophysis, and with longer flattened ventral apophysis (Figs. 206, 207). Embolus long, slender, with its base concealed by ventral apophysis (*va*) (Fig. 206); tegulum flat ventrad, nearly round (ventral view).

Female. Total length approximately 4.00 mm; carapace 1.69 ± 0.12 mm long, 1.58 ± 0.09 mm wide (19 specimens measured). General structure

essentially as in male, but carapace with brown area anterior to dorsal groove and abdomen without shiny scales (Figs. 208, 209). Epigynum with median septum slightly convex to slightly concave at lateral margins, broadening at genital groove (Fig. 210). Copulatory tubes (*ct*) making two transverse turns around spermathecae and joining the latter on or near mesal side (Figs. 211–213); spermathecae well-separated.

Range. Alberta to Labrador, southward to Arizona, Texas, and Florida.



Figs. 206–213. Structures of *Philodromus imbecillus*. 206, Palpus of male, ventral view; 207, Palpus of male, retrolateral view; 208, Leg I of female, prolateral view; 209, Body of female; 210, Epigynum; 211–213, Spermathecae. *ct*, copulatory tube; *va*, ventral apophysis.

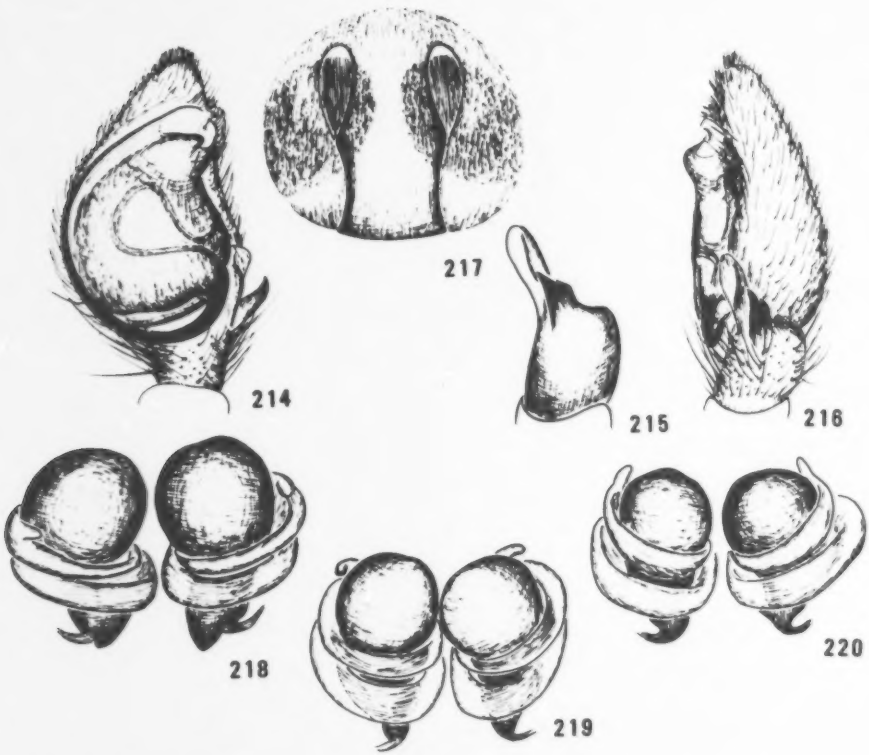
Comments. Specimens of *P. imbecillus* mainly resemble those of *P. mineri* and *P. insperatus*, but differ by having leg bands, a ventral band on the abdomen, a rounded tegulum, longer embolus, and transversely coiled copulatory tubes that join the spermathecae on or near the mesal sides of the latter. Specimens of *P. imbecillus* have been collected by sweeping grasses and shrubs and by beating coniferous and deciduous trees.

Philodromus mineri Gertsch

Figs. 214–220; Map 13

Philodromus mineri Gertsch, 1933*b*:14, fig. 21; Dondale & Redner 1968:10, figs. 3–5, 97–100.

Philodromus emertoni Bryant, 1933:181, figs. 17, 22 (pl. 2), fig. 34 (pl. 3).



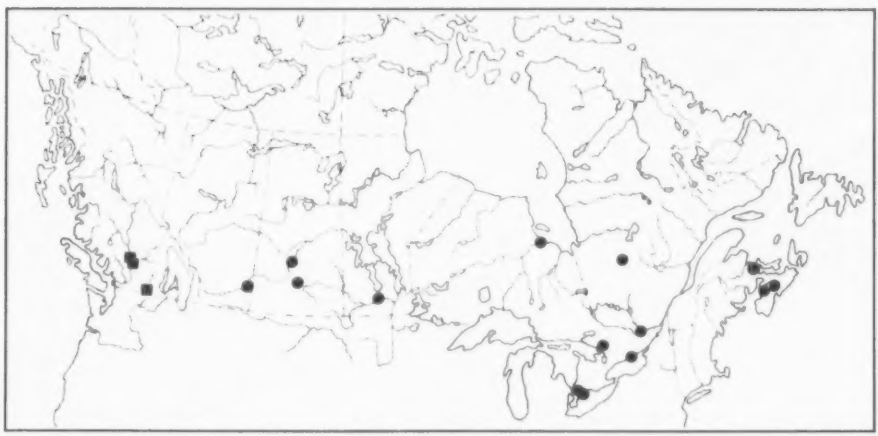
Figs. 214–220. Genitalia of *Philodromus mineri*. 214, Palpus of male, ventral view; 215, Palpal tibia of male, retrolateral view; 216, Palpus of male, retrolateral view; 217, Epigynum; 218–220, Spermathecae.

Male. Total length approximately 3.25 mm; carapace 1.42–1.85 mm long, 1.35–1.70 mm wide (eight specimens measured). Carapace shiny, orange to orange brown, speckled with brown, with pale V anterior to dorsal groove. Legs orange yellow, finely speckled with brown. Dorsum of abdomen brown to purple, covered with shiny scales. Palpal tibia with erect slender two-pointed retrolateral apophysis (Figs. 215, 216), and with slender non-angulate ventral apophysis (Fig. 214). Embolus long, slim, with its base fully exposed in ventral view (Fig. 214).

Female. Total length approximately 3.75 mm; carapace 1.34–1.85 mm long, 1.34–1.80 mm wide (eight specimens measured). General structure and color essentially as in male, but abdomen paler and lacking scales. Epigynum with median septum sinuous at sides (Fig. 217). Copulatory tubes making one and one-half tight oblique turns around spermathecae (Figs. 218–220); spermathecae close together.

Range. Arkansas, Alabama, and Florida, northward to Michigan and northern New York.

Comments. Specimens of *P. mineri* most resemble those of *P. imbecillus* and *P. insperatus*. The differences between specimens of *mineri* and *imbecillus* are mentioned under *imbecillus*. Specimens of *mineri* differ from *insperatus* because they lack distinct abdominal markings and they have an erect two-pointed retrolateral apophysis on the male palpal tibia, closely set spermathecae, and obliquely coiled copulatory tubes. The habitat is unrecorded.



Map 14. Collection localities of *Philodromus imbecillus* (●) and *P. insperatus* (■).

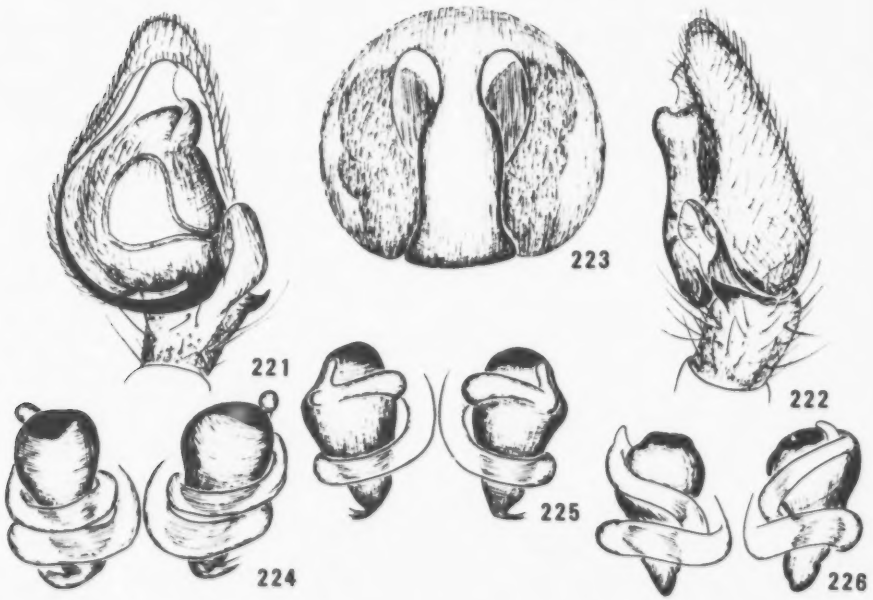
Philodromus insperatus Schick

Figs. 221–226; Map 14

Philodromus insperatus Schick, 1965:60, figs. 66–69; Dondale & Redner 1968:11, figs. 6, 7, 101–104.

Male. Total length approximately 3.00 mm; carapace 1.49 ± 0.16 mm long, 1.45 ± 0.15 mm wide (18 specimens measured). Carapace brown, shiny, with darker area posterior to posterior row of eyes. Legs orange yellow. Dorsum of abdomen mottled brown purple, with covering of shiny scales. Palpal tibia with low slender simple retrolateral apophysis (Fig. 222), and with angulate ventral apophysis (Fig. 221). Embolus long, thin, not concealed at base by ventral apophysis of tibia (Fig. 221); tegulum elongated distally (Fig. 221).

Female. Total length approximately 3.25 mm; carapace 1.54 ± 0.20 mm long, 1.51 ± 0.15 mm wide (13 specimens measured). General structure and color essentially as in male, but carapace with white V anterior to dorsal groove; legs paler, speckled with brown or purple; abdominal dorsum lacking shiny scales but having brown purple heart mark and chevrons. Epigynum



Figs. 221–226. Genitalia of *Philodromus insperatus*. 221, Palpus of male, ventral view; 222, Palpus of male, retrolateral view; 223, Epigynum; 224–226, Spermathecae.

with median septum concave at sides, moderately narrowed anteriad (Fig. 223). Copulatory tubes taking one and one-half loose turns around spermathecae; spermathecae well-separated (Figs. 224–226).

Range. Southern British Columbia to California, inland to Utah.

Comments. Specimens of *P. insperatus* mainly resemble those of *P. mineri* and *P. imbecillus*. The main points of difference are the low simple retrolateral apophysis and elongate tegulum in the male and the loosely coiled copulatory tubes in the female. Specimens of *insperatus* have been collected from sagebrush, pine, oak, fir, and manzanita.

Philodromus rufus Walckenaer

Figs. 12, 227–248; Maps 15, 16

Philodromus rufus Walckenaer, 1826:91; Dondale & Redner 1968:22, figs. 19–29, 86, 116–122, 211, 213–215, 217.
Philodromus clarae Bertkau, 1880:246.
Philodromus pictus Emerton, 1892:373, figs. 2–2*h* (pl. 31).
Philodromus pacificus Banks, 1898*b*:187.
Philodromus moestus Banks, 1904:353, fig. 30 (pl. 39).
Philodromus rufus virescens Simon, 1932:854, 884 (preoccupied in genus *Philodromus; see* Dondale 1972).
Philodromus vibrans Dondale, 1964:826, figs. 3, 6, 10, 11.

Male. Total length 3.40–4.25 mm; carapace 1.35–1.56 mm long, 1.32–1.53 mm wide (77 specimens measured). Carapace and legs yellow brown, orange, or orange yellow, with or without speckles; legs I and II vibrating rapidly during courtship. Dorsum of abdomen with or without chevrons. Palpal tibia with erect angulate hooked retrolateral apophysis, and with short flat ventral apophysis (Figs. 227, 229–231, 238–240, 244, 245). Embolus long, thin, curved, with paraembolar apopyhsis.

Female. Total length 3.75–4.50 mm; carapace 1.40–1.53 mm long, 1.35–1.49 mm wide (80 specimens measured). General structure and color essentially as in male. Epigynum with perforate median septum that permits spermathecae to be seen, and with narrow septal web (Fig. 233). Spermathecae with long slender hooked anterior extensions (Figs. 234, 235, 241, 242, 247, 248).

Range. Alaska to Labrador, southward to Durango, Mexico, and to North Carolina; Europe, Asia.

Comments. Specimens of *P. rufus* resemble those of *P. exilis*, but differ because they have chevrons or a pair of white longitudinal bands on the abdominal dorsum, an angulate retrolateral apophysis on the male palpal tibia, vibrating legs in courting males, and a narrow septal web in the epigynum of females.. Three subspecies, with intermediates, occur in Canada.

Philodromus rufus vibrans Dondale

Figs. 227–237; Map 15

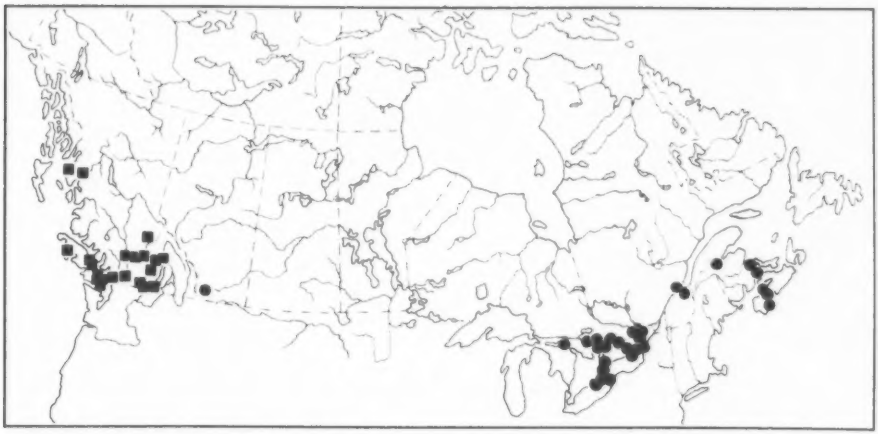
Philodromus vibrans Dondale, 1964:825, figs. 3, 6, 10, 11.
Philodromus rufus vibrans Dondale, 1967:459; Dondale & Redner 1968:24, figs. 19–24, 116, 117, 211, 217.

Male. Total length approximately 3.40 mm; carapace 1.35 ± 0.06 mm long, 1.32 ± 0.05 mm wide (30 specimens measured). Carapace yellow brown laterad, with fine brown speckles and black streaks. Legs yellow brown, finely speckled with brown or black (Fig. 228). Dorsum of abdomen speckled with brown or black; speckles forming about five thick broad chevrons on posterior half (Figs. 12, 232). Palpus as described for the species (Figs. 227, 229–231, 236, 237).

Female. Total length approximately 3.75 mm; carapace 1.40 ± 0.09 mm long, 1.35 ± 0.06 mm wide (30 specimens measured). General structure and color essentially as in male. Epigynum and spermathecae as described for the species (Figs. 233–235).

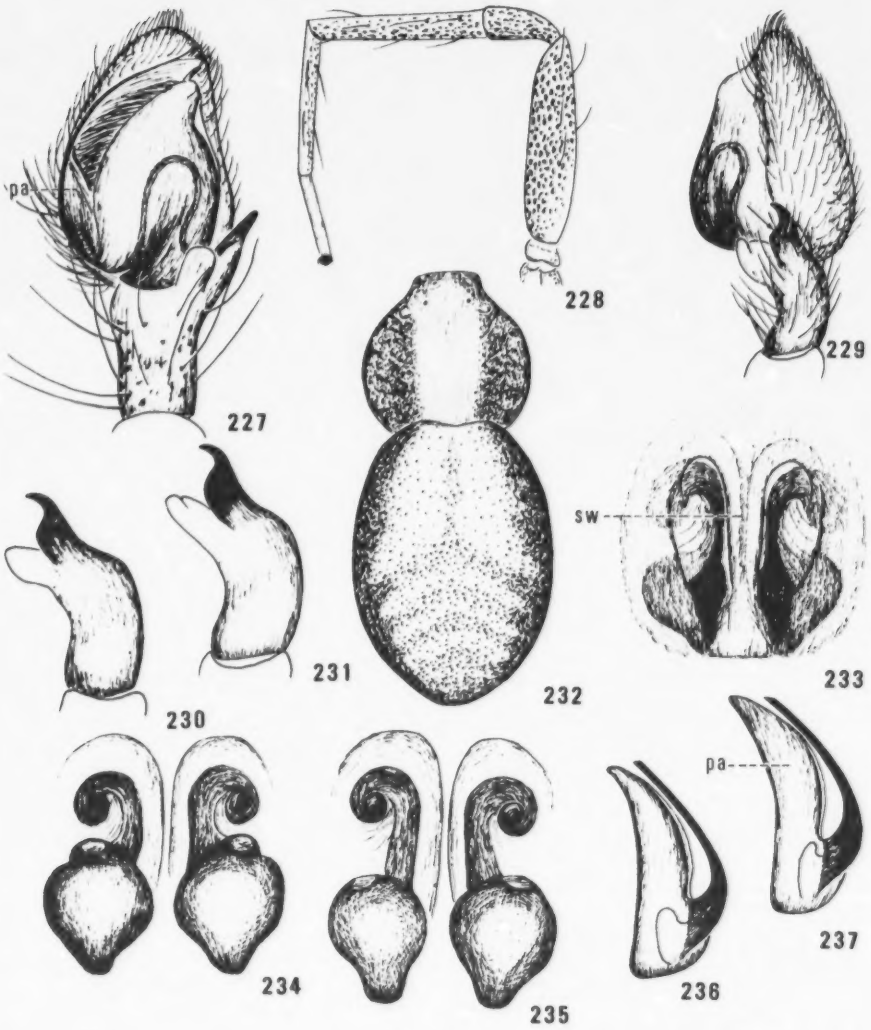
Range. Southern Alberta to Nova Scotia, southward to Nebraska, Ohio, and North Carolina.

Comments. Specimens of *P. rufus vibrans* are smaller than other subspecies and have yellow brown bodies with much brown or black speckling. The abdominal chevrons are broad (Fig. 232), in contrast to the narrow chevrons found on specimens of *P. rufus quartus* (Fig. 246) or to the indistinct divided chevrons in *P. rufus pacificus* (Fig. 243). Specimens of *vibrans* have



Map 15. Collection localities of *Philodromus rufus vibrans* (●) and *P. rufus pacificus* (■).

been collected from the foliage of cedar, juniper, pine, spruce, fir, and many kinds of deciduous trees and shrubs. They are sometimes found in, or on, buildings.



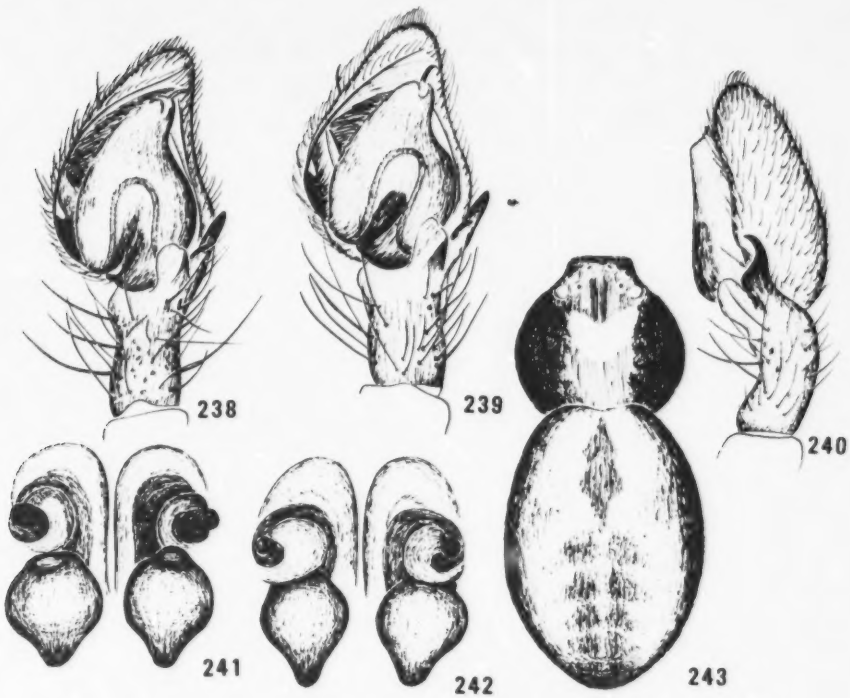
Figs. 227–237. Structures of *Philodromus rufus vibrans*. 227, Palpus of male, ventral view; 228, Leg I of female, prolateral view; 229, Palpus of male, retrolateral view; 230 and 231, Palpal tibia of male, retrolateral view; 232, Body of female; 233, Epigynum; 234 and 235, Spermathecae; 236 and 237, Embolus of male showing paraembolar apophysis. *pa*, paraembolar apophysis; *sw*, septal web.

Philodromus rufus pacificus Banks

Figs. 238–243; Map 15

Philodromus pacificus Banks, 1898*b*:187.
Philodromus moestus Banks, 1904:353, fig. 30 (pl. 39).
Philodromus rufus pacificus: Dondale & Redner 1968:28, figs. 27–29, 118–120, 215.

Male. Total length approximately 4.20 mm; carapace 1.51 ± 0.10 mm long, 1.49 ± 0.10 mm wide (22 specimens measured). Carapace with lateral areas orange red, usually without speckling. Legs red yellow, lightly speckled with brown or black. Dorsum of abdomen with dark heart mark, with narrow rather indistinct chevrons, and often with pair of longitudinal white lines that meet posterior to heart mark and extend to tip of abdomen. Palpus as described for the species (Figs. 238–240).



Figs. 238–243. Structures of *Philodromus rufus pacificus*. 238 and 239, Palpus of male, ventral view; 240, Palpus of male, retrolateral view; 241 and 242, Spermathecae; 243, Body of female.

Female. Total length approximately 4.40 mm; carapace 1.53 ± 0.09 mm long, 1.49 ± 0.08 mm wide (25 specimens measured). General structure and color (Fig. 243) essentially as in male. Epigynum and spermathecae as described for the species (Figs. 241, 242).

Range. West of the Rocky Mountains in British Columbia to California.

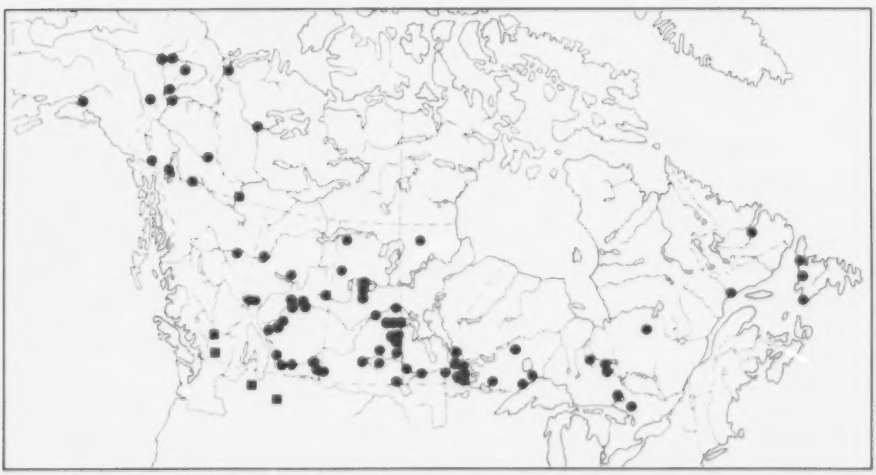
Comments. Specimens of *P. rufus pacificus* are larger and less speckled than those of *P. rufus vibrans* and have an orange red abdominal dorsum (rosy red in live specimens) rather than the yellow of *vibrans* or the brown or white coloring of *P. rufus quartus*. The legs and abdomen of specimens of *pacificus* are less speckled than those of the other subspecies. Specimens of *pacificus* have been collected from the foliage of oak, Douglas-fir, redwood, and pine and from woodland herbs.

Philodromus rufus quartus Dondale & Redner

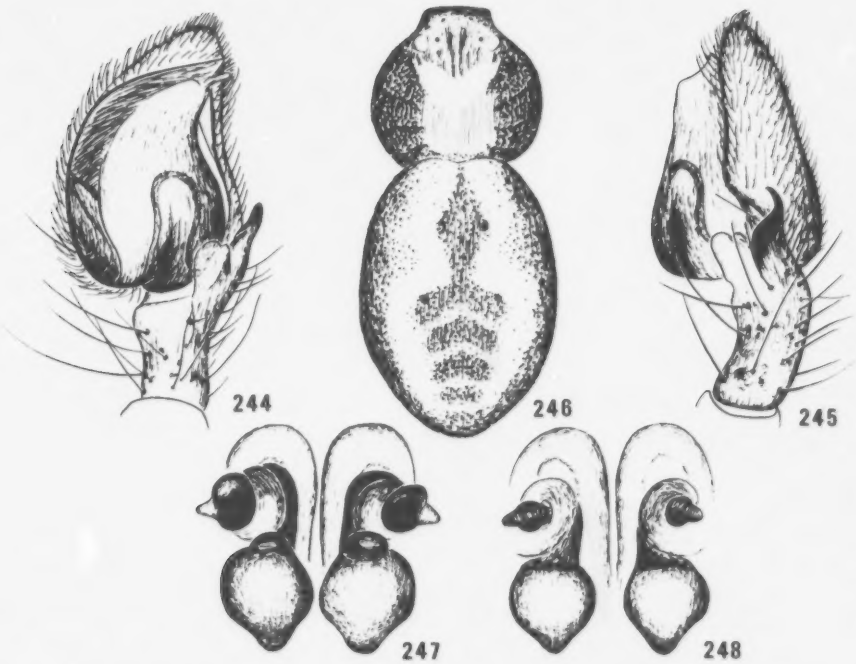
Figs. 244–248; Map 16

Philodromus rufus quartus Dondale & Redner, 1968:26, figs. 25, 26, 121, 122, 213.

Male. Total length approximately 4.25 mm; carapace 1.51 ± 0.08 mm long, 1.48 ± 0.07 mm wide (25 specimens measured). Carapace with orange red to orange brown lateral areas. Legs red yellow, moderately speckled with brown or black. Dorsum of abdomen moderately speckled with brown, with dark heart mark, and with group of narrow compact chevrons. Palpus as described for the species (Figs. 244, 245).



Map 16. Collection localities of *Philodromus rufus quartus* (●) and *P. rodecki* (■).



Figs. 244–248. Structures of *Philodromus rufus quartus*. 244, Palpus of male, ventral view; 245, Palpus of male, retrolateral view; 246, Body of female; 247 and 248, Spermathecae.

Female. Total length approximately 4.50 mm; carapace 1.56 ± 0.09 mm long, 1.53 ± 0.08 mm wide (25 specimens measured). General structure and color (Fig. 246) essentially as in male. Epigynum and spermathecae as described for the species (Figs. 247, 248).

Range. Alaska to Newfoundland, southward to Durango, Mexico, in the west and to the latitude of Lake Superior in the east.

Comments. The orange red to orange brown lateral areas on the carapace, the moderately speckled legs and abdominal dorsum, and the narrow chevrons on the dorsum distinguish specimens of *P. rufus quartus* from those of the other subspecies. The body is larger than in specimens of *P. rufus vibrans*. The usual habitat of *quartus* is spruce foliage.

Philodromus exilis Banks

Figs. 249–259; Map 17

Philodromus exilis Banks, 1892:63, fig. 40 (pl. 2); Dondale & Redner 1968:20, figs. 13–18, 113–115, 214, 223.

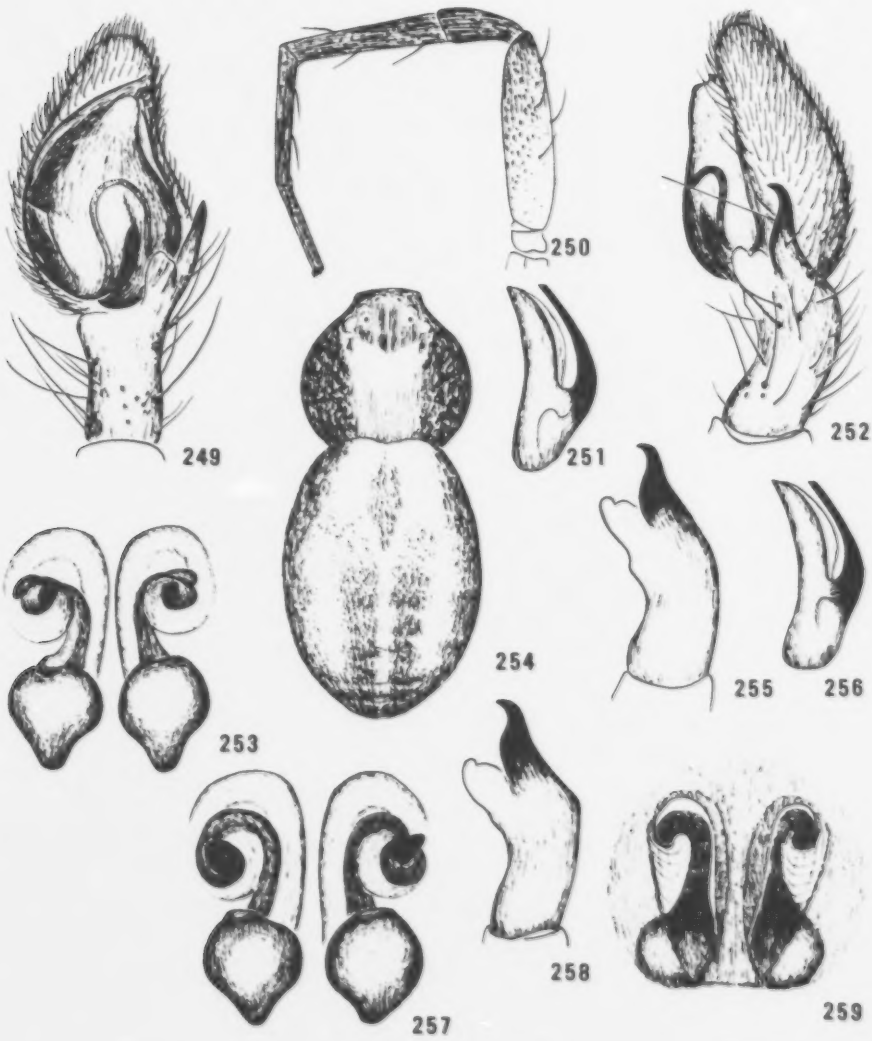
Male. Total length approximately 3.10 mm; carapace 1.37 ± 0.08 mm long, 1.34 ± 0.08 mm wide (30 specimens measured). Carapace with lateral areas dark red, usually not speckled. Legs yellow orange, usually not speckled; legs I and II not vibrating during courtship. Dorsum of abdomen light red to dark brown, with heart mark, and with pair of short red longitudinal bands. Palpal tibia with erect hooked curved retrolateral apophysis (Figs. 252, 255, 258), and with flattened ventral apophysis (Fig. 249). Embolus moderately long, thin, curved, with paraembolar apophysis (Figs. 249, 251, 256).

Female. Total length approximately 3.60 mm; carapace 1.47 ± 0.11 mm long, 1.44 ± 0.12 mm wide (30 specimens measured). General structure and color essentially as in male, but dorsum of abdomen usually yellow laterad of red longitudinal bands (Fig. 254). Legs speckled as in Fig. 250. Epigynum with fairly wide median septum and wide web (Fig. 259), and with perforations that permit spermathecae to be seen externally. Spermathecae with slender curved anterior extensions (Figs. 253, 257).

Range. Minnesota and Wisconsin, eastward to Nova Scotia.

Comments. Living specimens of *P. exilis* have a distinctive red pattern on a yellow background, but preservation in alcohol fades the colors so that museum specimens, particularly females, resemble specimens of the subspecies of *P. rufus*. The red longitudinal bands on the abdominal dorsum usually persist, permitting separation from specimens of *P. rufus vibrans*,

Map 17. Collection localities of *Philodromus exilis* (●), *P. peninsulanus* (■), and *P. josemitensis* (▲).



Figs. 249–259. Structures of *Philodromus exilis*. 249, Palpus of male, ventral view; 250, Leg I of female, prolateral view; 251 and 256, Embolus of male showing paraembolar apophysis; 252, Palpus of male, retrolateral view; 253 and 257, Spermathecae; 254, Body of female; 255 and 258, Palpal tibia of male, retrolateral view; 259, Epigynum.

which have speckled chevrons. The retrolateral apophysis of the male palpal tibia is usually nonangulate, and the septal web of females is fairly wide. Courting males do not vibrate the front legs. Specimens of *exilis* have been collected from the foliage of cedar, juniper, pine, spruce, fir, and various deciduous trees and shrubs.

Philodromus minutus Banks

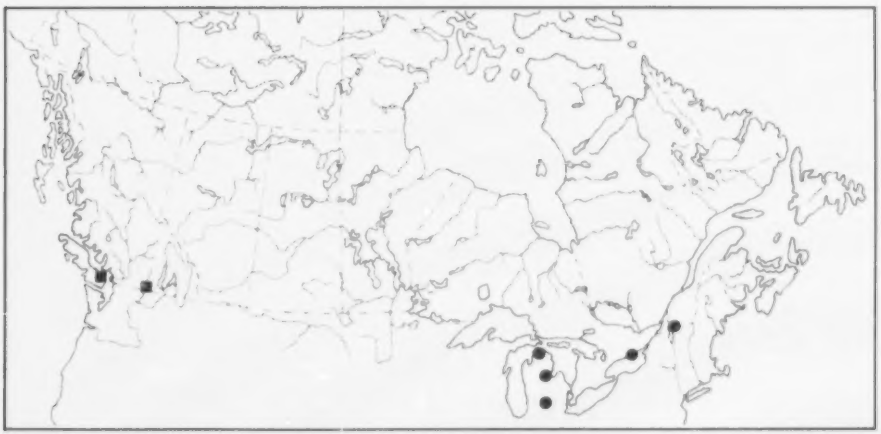
Figs. 260–270; Map 18

Philodromus minutus Banks, 1892:62, fig. 85 (pl. 5); Dondale & Redner 1968:54, figs. 78–80, 193–198, 208–218.

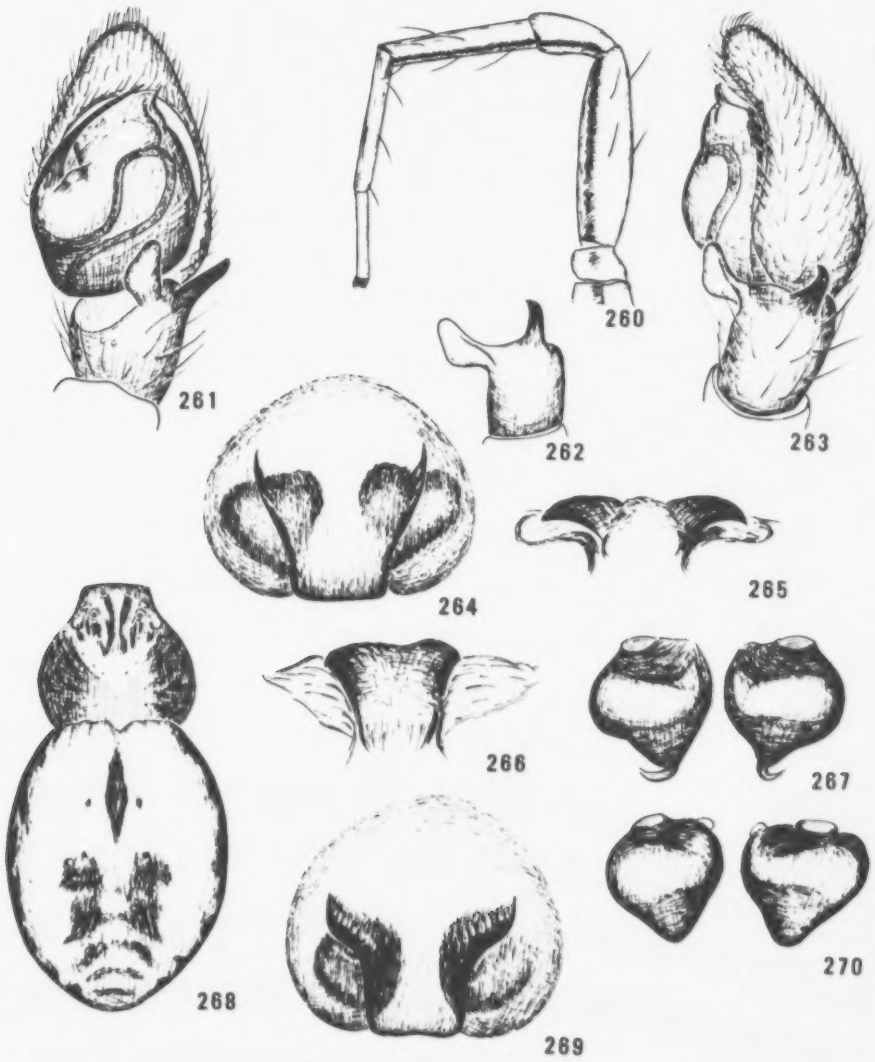
Philodromus brevis Emerton, 1892:375, figs. 2–2*d* (pl. 32).

Philodromus inaequipes Banks, 1900:99.

Male. Total length approximately 2.50 mm; carapace 1.36 ± 0.07 mm long, 1.33 ± 0.05 mm wide (16 specimens measured). Carapace with lateral areas dark red brown, and with pale V anterior to dorsal groove. Legs orange yellow to brown yellow, with thin dark longitudinal band along prolateroventral surface of legs III and IV, and with less distinct bands along retrolateroventral surface of all legs. Dorsum of abdomen slightly irridescent, suffused with purple, with indistinct heart mark, with pair of posterolateral bands or with chevrons, and with paired black spots near anal tubercle. Palpal tibia with long erect hooked retrolateral apophysis (Figs. 262, 263), and with ventral apophysis constricted at base and set apart from retrolateral apophysis (Fig. 261). Embolus smooth, curved, arising midway along tegulum on prolateral margin, broad at base (Fig. 261).



Map 18. Collection localities of *Philodromus minutus* (●) and *P. speciosus* (■).



Figs. 260–270. Structures of *Philodromus minutus*. 260, Leg III of female, prolateral view; 261, Palpus of male, ventral view; 262, Palpal tibia of male, retrolateral view; 263, Palpus of male, retrolateral view; 264 and 269, Epigynum; 265 and 266, Epigynum, anterior view; 267 and 270, Spermathecae; 268, Body of female.

Female. Total length approximately 3.40 mm; carapace 1.37 ± 0.10 mm long, 1.34 ± 0.11 mm wide (18 specimens measured). General shape and color essentially as in male, but carapace mottled; legs lightly speckled prolaterad (Fig. 260); abdomen paler (Fig. 268). Epigynum with short median septum that widens anteriad and lacks a raised surface piece or deep grooves (Figs. 264–266, 269). Spermathecae rounded, tapered abruptly posteriad, close together (Figs. 267, 270).

Range. Texas to Georgia, northward to Minnesota, southern Ontario, Quebec, and Massachusetts.

Comments. Specimens of *P. minutus* are distinguished by the smooth curved embolus, the long erect retrolateral apophysis on the male palpal tibia, and the short median septum of the epigynum. Specimens of *minutus* have been collected from grasses and from the stems and foliage of various shrubs and trees.

Philodromus peninsulanus Gertsch

Figs. 271–279; Map 17

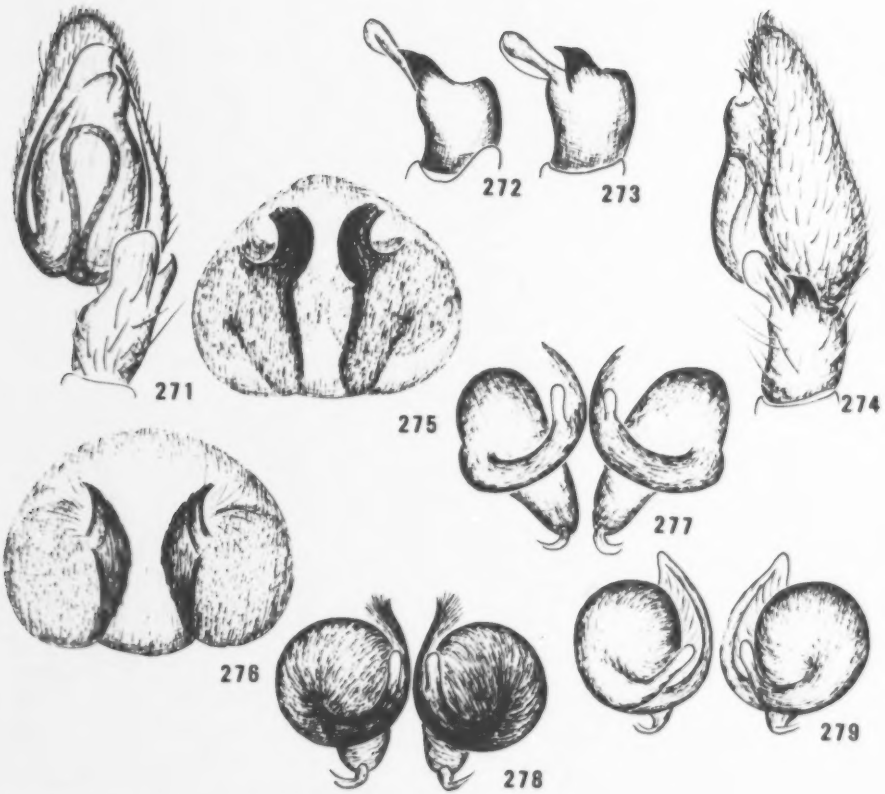
Philodromus peninsulanus Gertsch, 1934:22, fig. 25; Dondale & Redner 1968:31, figs. 30–33, 127–131.
Philodromus michiganense Levi, 1951:30, figs. 38, 39.

Male. Total length approximately 3.00 mm; carapace 1.32–1.47 mm long, 1.34–1.45 mm wide (three specimens measured). Carapace light orange, with dark area posterior to posterior row of eyes, with white V anterior to dorsal groove, and with thin covering of irridescent scales. Legs yellow orange, lightly speckled prolaterad and retrolaterad. Dorsum of abdomen off-white, with heart mark and chevrons, and with covering of irridescent scales. Palpal tibia with erect hooked retrolateral apophysis (Figs. 272–274), and with thin broadly rounded ventral apophysis (Fig. 271). Embolus slender, moderately long, arising approximately at level of tip of ventral apophysis (Fig. 271).

Female. Total length approximately 4.70 mm; carapace 1.56 ± 0.09 mm long, 1.46 ± 0.08 mm wide (10 specimens measured). General shape and color essentially as in male, but carapace and abdomen lacking irridescent scales. Epigynum with median septum widening posteriad (Figs. 275, 276). Spermathecae flattened dorsad, as long as or longer than wide, partly obscuring the epigynal atrium (Figs. 277–279).

Range. Florida, northward to southern Manitoba, southern Ontario, and New York.

Comments. Specimens of *P. peninsulanus* mainly resemble those of *P. placidus* but differ by having unbanded legs, a longer embolus, an undivided retrolateral apophysis on the male palpal tibia, and long flattened spermathecae that partly obscure the epigynal atrium. The habitat is unrecorded.



Figs. 271–279. Genitalia of *Philodromus peninsulanus*. 271, Palpus of male, ventral view; 272 and 273, Palpal tibia of male, retrolateral view; 274, Palpus of male, retrolateral view; 275 and 276, Epigynum; 277–279, Spermathecae.

Philodromus placidus Banks

Figs. 280–288; Map 19

Philodromus placidus Banks, 1892:62, figs. 25, 25*a* (pl. 3); Dondale & Redner 1968:32, figs. 34, 35, 132–136, 207, 216.

Philodromus bidentatus Emerton, 1892:375, figs. 5–5*b* (pl. 31).

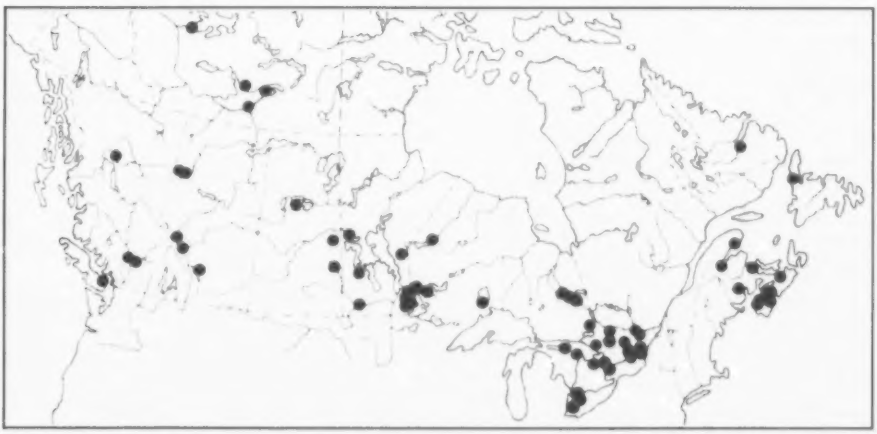
Male. Total length approximately 3.25 mm; carapace 1.62 ± 0.13 mm long, 1.58 ± 0.13 mm wide (18 specimens measured). Carapace brown, sometimes mottled with gray, with covering of irridescent scales. Legs yellow brown, coarsely speckled with dark brown, with dark area at middle of femora and usually at ends of other segments (Fig. 280); patellae III and IV with black band on prolateroventral surface. Dorsum of abdomen mottled

off-white and purple brown, with dark heart mark, with narrow chevrons, and with covering of irridescent scales. Palpal tibia with erect bidentate retrolateral apophysis (Fig. 282), and with moderately long blunt ventral apophysis (Fig. 281). Embolus slender, arising prolaterally near midpoint of tegulum (Fig. 281).

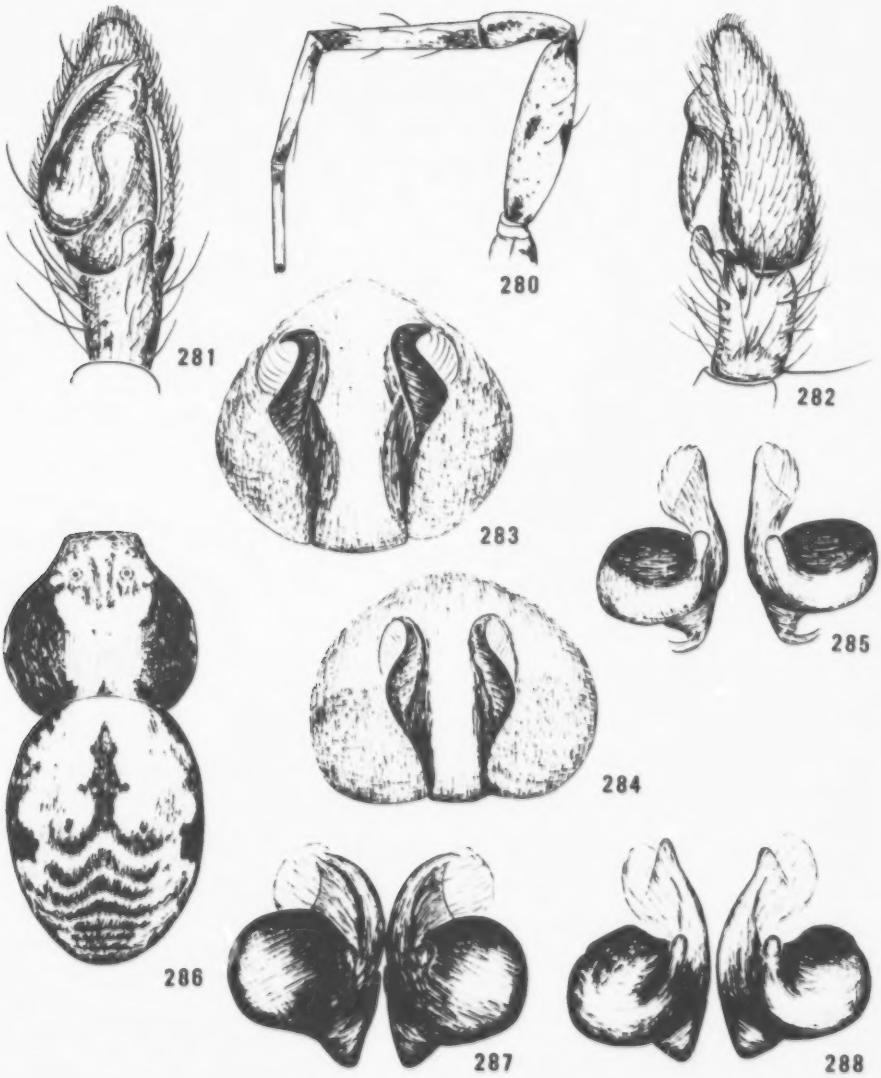
Female. Total length approximately 4.10 mm; carapace 1.68 ± 0.11 mm long, 1.66 ± 0.10 mm wide (17 specimens measured). General structure and color essentially as in male but carapace and abdomen lacking irridescent scales (Fig. 286). Epigynum with median septum widest in anterior half; septal margins extending over atrium (Figs. 283, 284). Spermathecae usually slightly wider than long, convex on dorsal side, close together, not flattened or obscuring atrium (Figs. 285, 287, 288).

Range. Alaska to Newfoundland, southward to Vancouver Island, Mexico, and Florida.

Comments. The black bands along patellae III and IV, short embolus, bidentate retrolateral apophysis on the male palpal tibia, and spermathecae that are not flattened and that do not obscure the atrium distinguish specimens of *P. placidus* from those of *P. peninsulanus*. The main habitat is the foliage of conifers.



Map 19. Collection localities of *Philodromus placidus*.



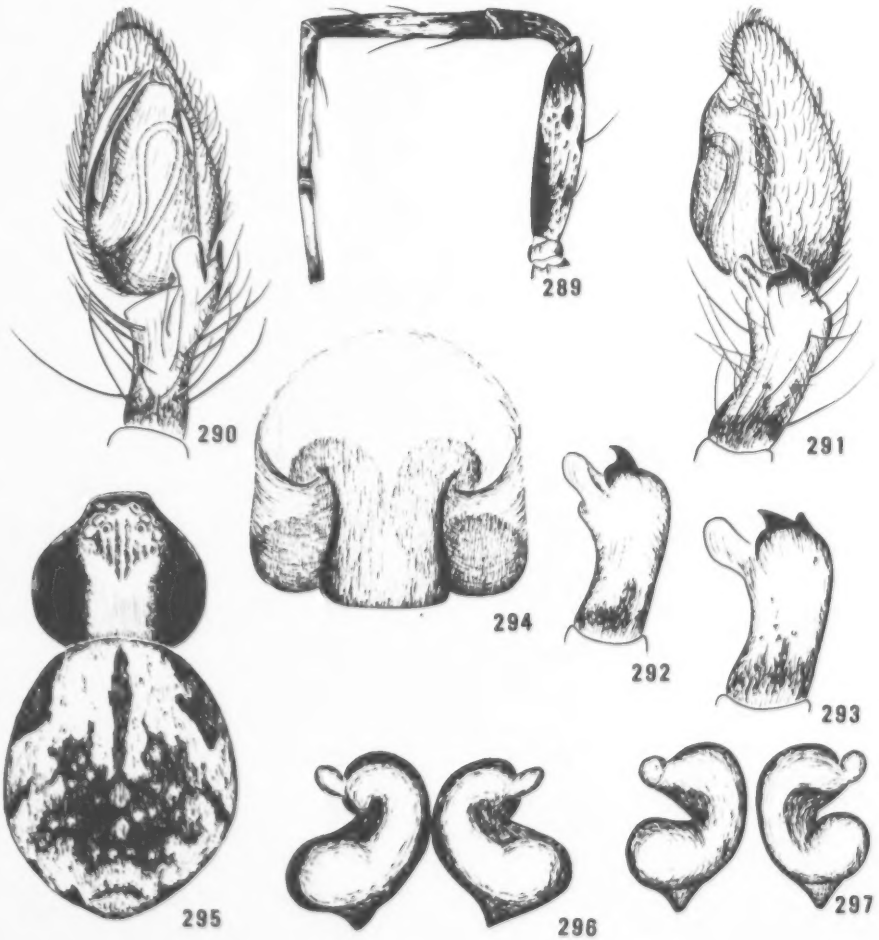
Figs. 280–288. Structures of *Philodromus placidus*. 280, Leg I of female, prolateral view; 281, Palpus of male, ventral view; 282, Palpus of male, retrolateral view; 283 and 284, Epigynum; 285, 287, and 288, Spermathecae; 286, Body of female.

Philodromus speciosus Gertsch

Figs. 289–297; Map 18

Philodromus speciosus Gertsch, 1934:22, figs. 21, 23; Dondale & Redner 1968:36, figs. 41–44, 142–144, 209, 221.

Male. Total length approximately 4.00 mm; carapace 1.40–1.90 mm long, 1.40–1.80 mm wide (nine specimens measured). Carapace soft red brown laterad, with front mainly brown. Legs yellow brown; legs III and IV paler with dark areas at bases of macrosetae and at ends of segments. Dorsum of abdomen with purple heart mark, with brown to black lateral areas, and



with narrow chevrons. Palpal tibia with erect retrolateral apophysis that is broad at base and that usually bears two unequal teeth, and with flat blunt ventral apophysis (Figs. 291–293). Embolus thin, nearly straight, arising near midpoint of tegulum (Fig. 290).

Female. Total length approximately 4.50 mm; carapace 1.71 ± 0.12 mm long, 1.69 ± 0.12 mm wide (18 specimens measured). General structure and color (Figs. 289, 295) essentially as in male but paler. Epigynum with short broad median septum (Fig. 294). Spermathecae slender, curved at middle, slightly more than one-half as long as epigynum, expanded anteriad and posteriad (Figs. 296, 297).

Range. Interior California to interior British Columbia, eastward to Colorado and Wyoming.

Comments. The embolus of male *P. speciosus* is longer than that of *P. josemitensis*, and shorter than that of *P. oneida*. The curved spermathecae that are enlarged at both ends distinguish females of *speciosus* from those of *oneida* and the west coast species *josemitensis*. The habitat of *speciosus* is unrecorded.

Philodromus oneida Levi

Figs. 298–307; Map 20

Philodromus oneida Levi, 1951:33, figs. 40–42; Dondale & Redner 1968:35, figs. 36–40, 137–141.

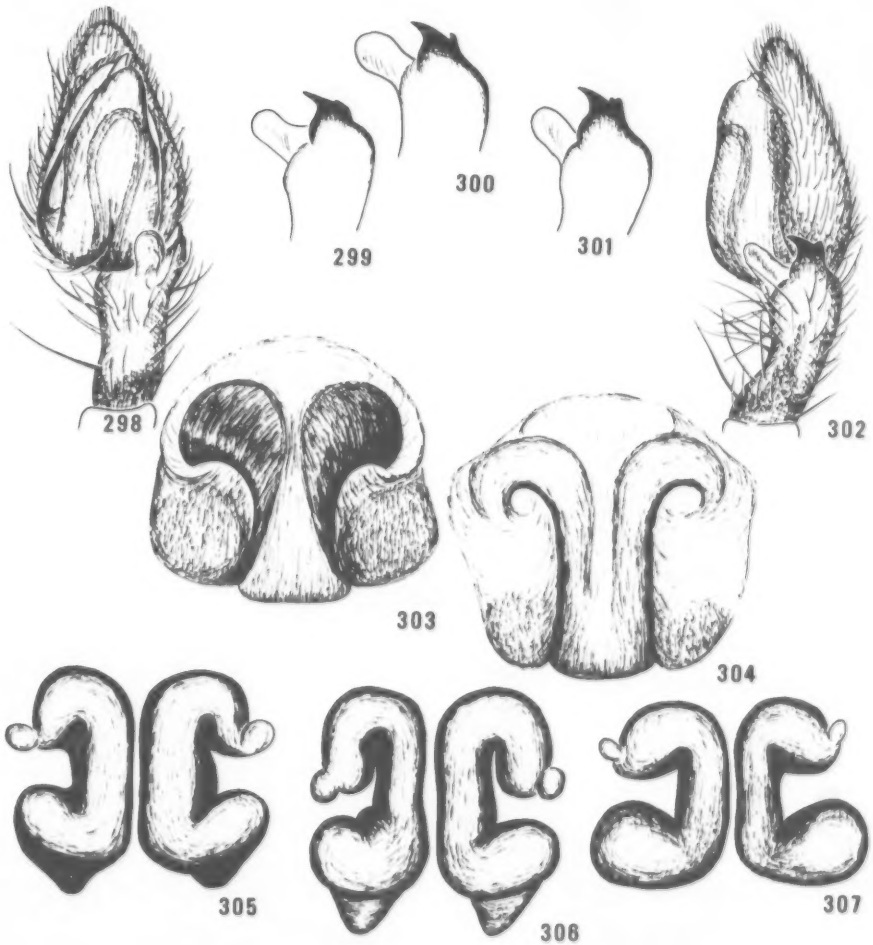
Male. Total length approximately 3.25 mm; carapace 1.90 ± 0.12 mm long, 1.84 ± 0.12 mm wide (12 specimens measured). Carapace soft red brown laterad, with front mainly brown. Legs yellow, with purple or brown areas along prolateral surface of femur I, at bases of macrosetae, and at ends of segments. Dorsum of abdomen with brown heart mark, and with series of brown to black chevrons. Palpal tibia with erect retrolateral apophysis bearing one or two teeth and broad at base (Figs. 299–302), and with flat blunt ventral apophysis (Fig. 298). Embolus thin, nearly straight, arising basad of midpoint of tegulum (Fig. 298).

Female. Total length approximately 3.80 mm; carapace 1.83 ± 0.14 mm long, 1.85 ± 0.10 mm wide (14 specimens measured). General structure and color essentially as in male, but legs and abdomen paler. Epigynum with long broad median septum, and with small atrium (Figs. 303, 304). Spermathecae enlarged anteriad and posteriad, parallel in middle section (Figs. 305–307).

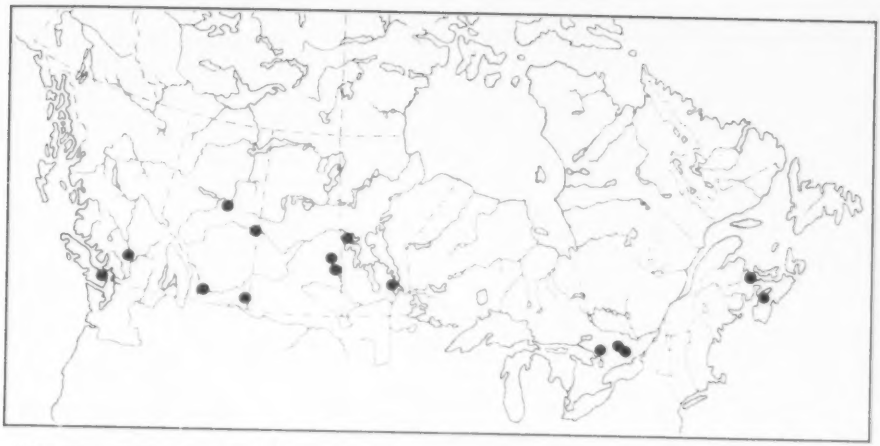
Figs. 289–297. Structures of *Philodromus speciosus*. 289, Leg I of female, prolateral view; 290, Palpus of male, ventral view; 291, Palpus of male, retrolateral view; 292 and 293, Palpal tibia of male, retrolateral view; 294, Epigynum; 295, Body of female; 296 and 297, Spermathecae.

Range. British Columbia to Nova Scotia, southward to Oregon, South Dakota, and Illinois.

Comments. The embolus of male *P. oneida* is longer than that of *P. speciosus* or *P. josemitensis*. The parallel middle sections of the spermathecae distinguish females of *oneida* from those of the other species. Specimens of *oneida* have been collected from the foliage of various trees including spruce, larch, and willow. One specimen was found on a building.



Figs. 298–307. Genitalia of *Philodromus oneida*. 298, Palpus of male, ventral view; 299–301, Palpal tibia of male, retrolateral view; 302, Palpus of male, retrolateral view; 303 and 304, Epigynum; 305–307, Spermathecae.



Map 20. Collection localities of *Philodromus oneida*.

Philodromus rodecki Gertsch & Jellison

Figs. 308–314; Map 16

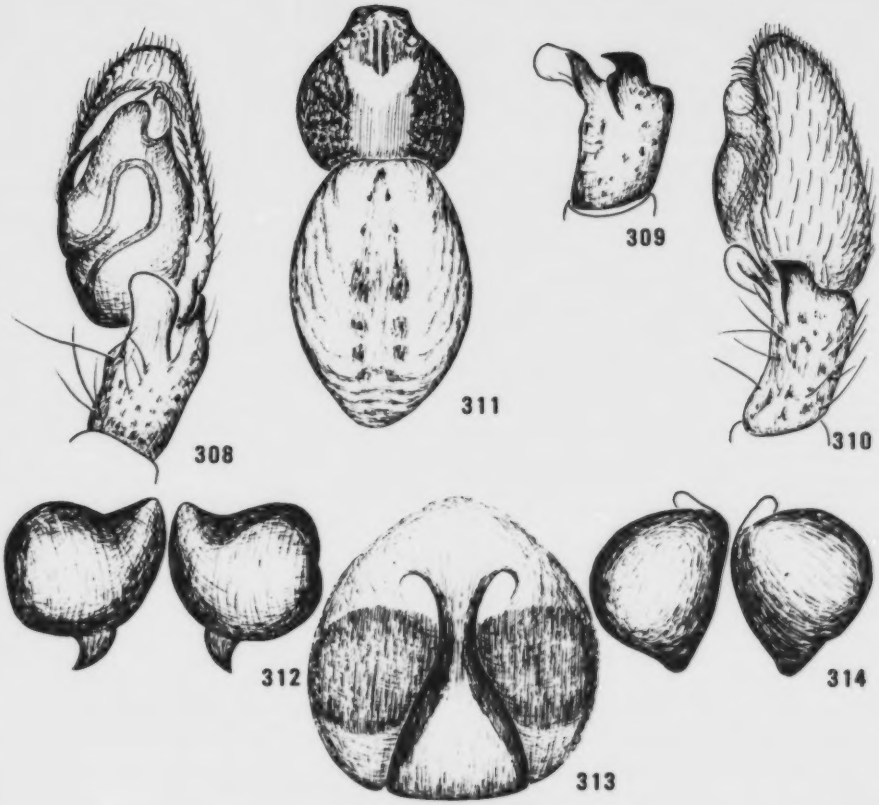
Philodromus rodecki Gertsch & Jellison, 1939:7, figs. 4–6; Dondale & Redner 1968:48, figs. 65–67, 168–170, 212.

Male. Total length approximately 4.50 mm; carapace 1.73–1.93 mm long, 1.76–1.94 mm wide (three specimens measured). Carapace orange brown, with white V anterior to dorsal groove, and with brown front. Legs yellow brown, sometimes finely speckled with brown. Dorsum of abdomen with light purple heart mark flanked by pair of white lines that join posteriad and extend to anal tubercle. Palpal tibia with broad truncate retrolateral apophysis that bears a small tooth on ventral margin (Figs. 309, 310), and with broad blunt ventral apophysis (Fig. 308). Embolus thick, nearly straight, arising slightly distad of midpoint of tegulum (Fig. 308).

Female. Total length approximately 6.00 mm; carapace 2.00 ± 0.09 mm long, 1.99 ± 0.07 mm wide (17 specimens measured). General structure and color (Fig. 311) essentially as in male but paler. Epigynum with median septum strongly and evenly narrowed anteriad (Fig. 313). Spermathecae rounded in outline, close together (Figs. 312, 314).

Range. Interior British Columbia to interior California, eastward to Montana, Colorado, and New Mexico.

Comment. The embolus of male *P. rodecki* is approximately the same length as that of male *P. josemitensis*, but the retrolateral apophysis of *rodecki* is much broader. The strongly and evenly narrowed median septum and rounded spermathecae distinguish the female of *rodecki*. A female *rodecki* was collected with her egg sac under a stone at 2895 m elevation.



Figs. 308–314. Structures of *Philodromus rodecki*. 308, Palpus of male, ventral view; 309, Palpal tibia of male, retrolateral view; 310, Palpus of male, retrolateral view; 312 and 314, Spermathecae; 313, Epigynum.

Philodromus josemitensis Gertsch

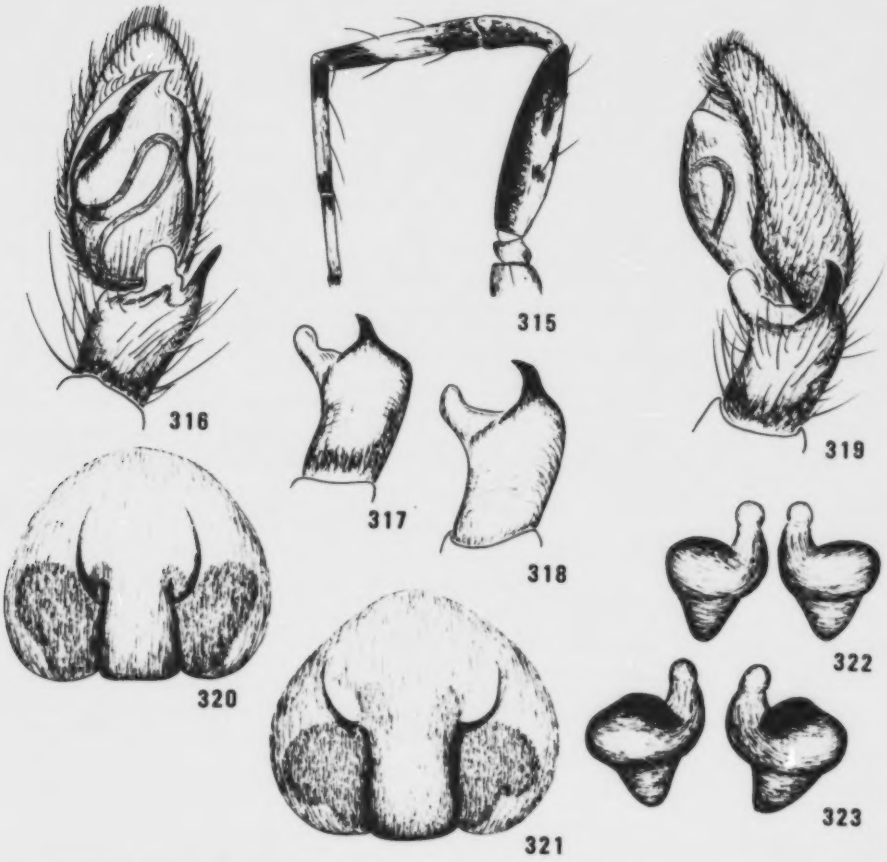
Figs. 315–323; Map 17

Philodromus josemitensis Gertsch, 1934:23, fig. 24; Dondale & Redner 1968:38, figs. 45–48, 145–148, 219.

Male. Total length approximately 3.25 mm; carapace 1.56 ± 0.17 mm long, 1.52 ± 0.17 mm wide (15 specimens measured). Carapace mottled brown and yellow. Legs yellow brown, with indistinct dark areas along prolateral surface of femora I and II, at bases of macrosetae, and at ends of segments. Dorsum of abdomen with brown purple heart mark, and with mottled lateral areas. Palpal tibia with erect slender slightly hooked retro-

lateral apophysis (Figs. 317–319), and with short blunt ventral apophysis (Fig. 316). Embolus short, nearly straight, arising in distal half of tegulum (Fig. 316).

Female. Total length approximately 4.00 mm; carapace 1.71 ± 0.07 mm long, 1.70 ± 0.06 mm wide (15 specimens measured). General structure and color essentially as in male, but femora I and II usually with distinct prolateral band (Fig. 315), and dorsum of abdomen with pair of dark marks at lateral angles and a second pair near apex. Epigynum with short wide median septum (Figs. 320, 321). Spermathecae expanded at middle, with slender anterior piece lying parallel to long axis of body (Figs. 322, 323).



Figs. 315–323. Structures of *Philodromus josemitensis*. 315, Leg I of female, prolateral view; 316, Palpus of male, ventral view; 317 and 318, Palpal tibia of male, retrolateral view; 319, Palpus of male, retrolateral view; 320 and 321, Epigynum; 322 and 323, Spermathecae.

Range. California to Vancouver Island.

Comments. The erect, slender, and slightly hooked retrolateral apophysis and short embolus distinguish males of *P. josemitensis* from those of *P. speciosus* and *P. oneida*. The slender parallel spermathecal organ ducts of the spermathecae distinguish females of *josemitensis* from those of other species. Schick (1965) gives the habitat of *josemitensis* as the moist coniferous forests of the Pacific coast.

Genus *Tibellus* Simon

These spiders are primarily inhabitants of tall grasses, sedges, ferns, and similar herbs in fields, meadows, and marshes. They are most easily collected with a sweep net. The body is elongate and slender, and a specimen at rest on a grass stem is difficult to detect because the striped body is pressed close to the stem and the legs are extended front and back.

Description. Total length 5.60–11.00 mm. Carapace approximately 2.80 mm long, 2.30 mm wide. Carapace rather low, smoothly convex at lateral margins, longer than wide, yellow with brown or dusky midstripe, sometimes with pair of lateral stripes. Posterior row of eyes strongly recurved; posterior median eyes closer to each other than to posterior lateral eyes; eyes approximately uniform in size. Legs long, slender, laterigrade, yellow, lacking dark rings, usually without longitudinal bands, with well-developed scopulae and claw tufts; leg IV longest. Abdomen elongate, slender, yellow, with brown or dusky midstripe dorsad, and sometimes with one or two pairs of dark spots. Palpal tibia of male with or without small retrolateral apophysis, and usually with small simple ventral apophysis. Embolus short, spurlike, situated at distal end of tegulum. Epigynum of female with median septum varying according to species. Spermathecae ovoid or kidney-shaped.

Comments. Representatives of the genus *Tibellus* are distinctly elongate in body and legs (Fig. 73). The midstripe on carapace and abdomen, lack of heart mark or distinctive leg bands or rings, spacing of the eyes in the posterior row, and reduced apophyses on the male palpal tibia are distinguishing characteristics. Leg IV is longest rather than leg I or II, a condition shared with specimens of *Apollophanes* spp.

About 30 world species of *Tibellus* are known, seven of which occur in North America. Five species occur or are assumed to occur in Canada.

Key to species of *Tibellus*

1. Tibia I with three pairs of ventral macrosetae 2
   Tibia I with four pairs of ventral macrosetae 4

2(1). Embolus (*e*) of male with basal part expanded, grooved, and ridged (Fig. 324). Copulatory openings (*co*) of female near center of epigynum (Fig. 325); spermathecae less than one-half as wide as long (Fig. 326). Dorsum of abdomen lacking paired dark spots ..... ***maritimus* (Menge),** p. 97

Embolus of male with basal part not expanded, not grooved, and not ridged (Figs. 328, 334). Copulatory openings (*co*) of female near posterior or lateral margins of epigynum (Figs. 330, 336); spermathecae more than one-half as wide as long (Figs. 331, 337). Dorsum of abdomen with paired dark spots on posterior one-third (Fig. 73) 3

3(2). Embolus of male visible for its whole length in ventral view (Fig. 328). Copulatory openings (*co*) of female near posterior margin of epigynum (Fig. 330) ..... ***oblongus* (Walckenaer),** p. 99

Embolus of male hidden for nearly its whole length in ventral view (Fig. 333). Copulatory openings (*co*) of female at lateral margins of epigynum (Fig. 336) ..... ***gertschi* Chamberlin & Ivie,** p. 101

4(1). Embolus of male with notch in margin distinctly visible in ventral view (Fig. 338). Spermathecal organ of female extending nearly to anterior ends of spermathecae (Fig. 341) ..... ***chamberlini* Gertsch,** p. 102

Embolus of male with notch in margin not distinctly visible in ventral view (Fig. 343). Spermathecal organ (*so*) of female extending anteriad only two-thirds length of spermathecae (Fig. 346) ..... ***duttoni* (Hentz),** p. 104

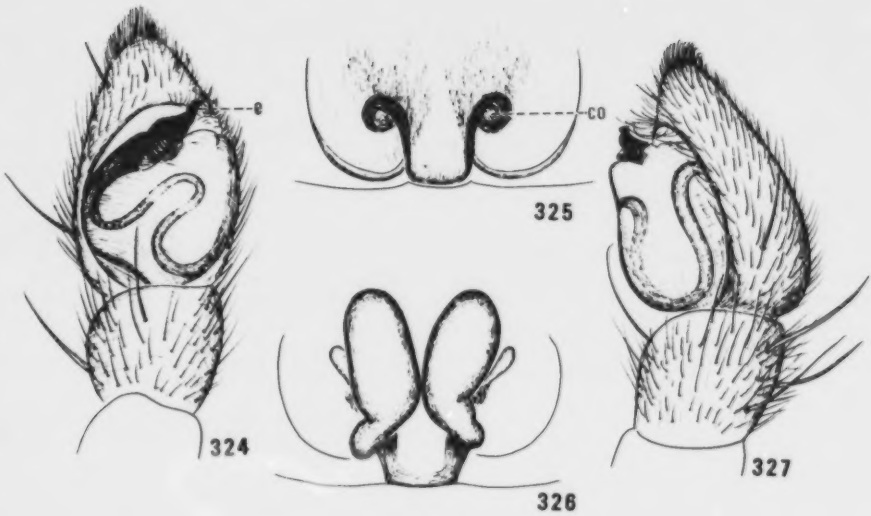
Tibellus maritimus (Menge)

Figs. 324–327; Map 21

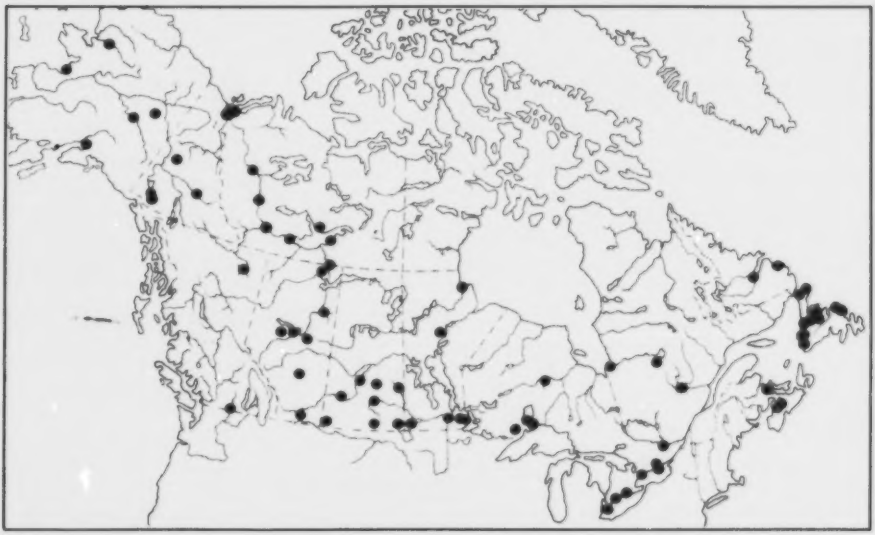
Thanatus maritimus Menge, 1875:398, fig. 225 (pl. 67).
Tibellus maritimus: Gertsch 1933*a*:8, figs. 10–12.

Male. Total length approximately 6.00 mm; carapace 2.57 ± 0.13 mm long, 2.11 ± 0.28 mm wide (15 specimens measured). Carapace yellow, with brown midstripe. Legs yellow, without bands or rings; tibia I with three pairs of ventral macrosetae. Dorsum of abdomen yellow, with brown midstripe, without paired spots. Palpal tibia without retrolateral apophysis or ventral apophysis (Figs. 324, 327). Embolus (*e*) expanded, ridged, and grooved at base (Fig. 324).

Female. Total length approximately 8.00 mm; carapace 2.93 ± 0.17 mm long, 2.32 ± 0.19 mm wide (15 specimens measured). General structure and color essentially as in male. Epigynum with copulatory openings (*co*) near center (Fig. 325). Spermathecae elongate, less than one-half as wide as long (Fig. 326).



Figs. 324–327. Genitalia of *Tibellus maritimus*. 324, Palpus of male, ventral view; 325, Epigynum; 326, Spermathecae; 327, Palpus of male, retrolateral view. *co*, copulatory opening; *e*, embolus.



Map 21. Collection localities of *Tibellus maritimus*.

Range. Alaska to Newfoundland, southward to Utah and New England; Europe, Asia.

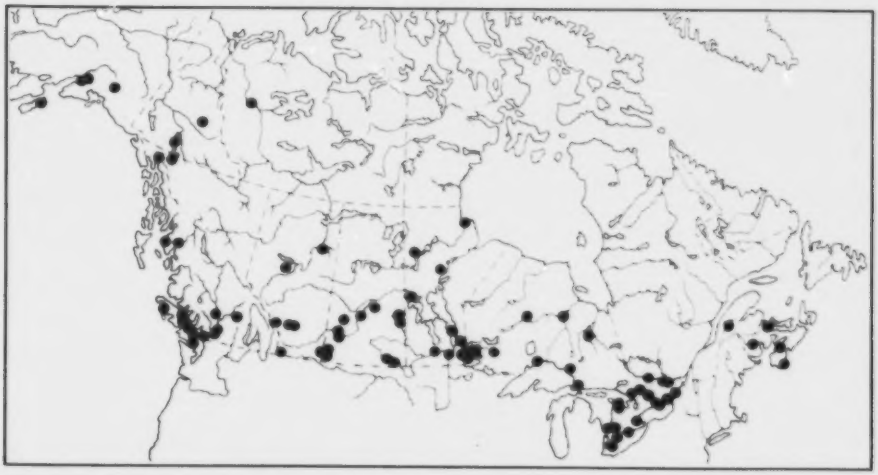
Comments. The basally expanded, grooved, and ridged embolus and lack of apophyses on the palpal tibia of males, and the position of the copulatory openings and relatively slender spermathecae of females, distinguish specimens of *T. maritimus* from those of the other species. The habitat is tall grass.

Tibellus oblongus (Walckenaer)

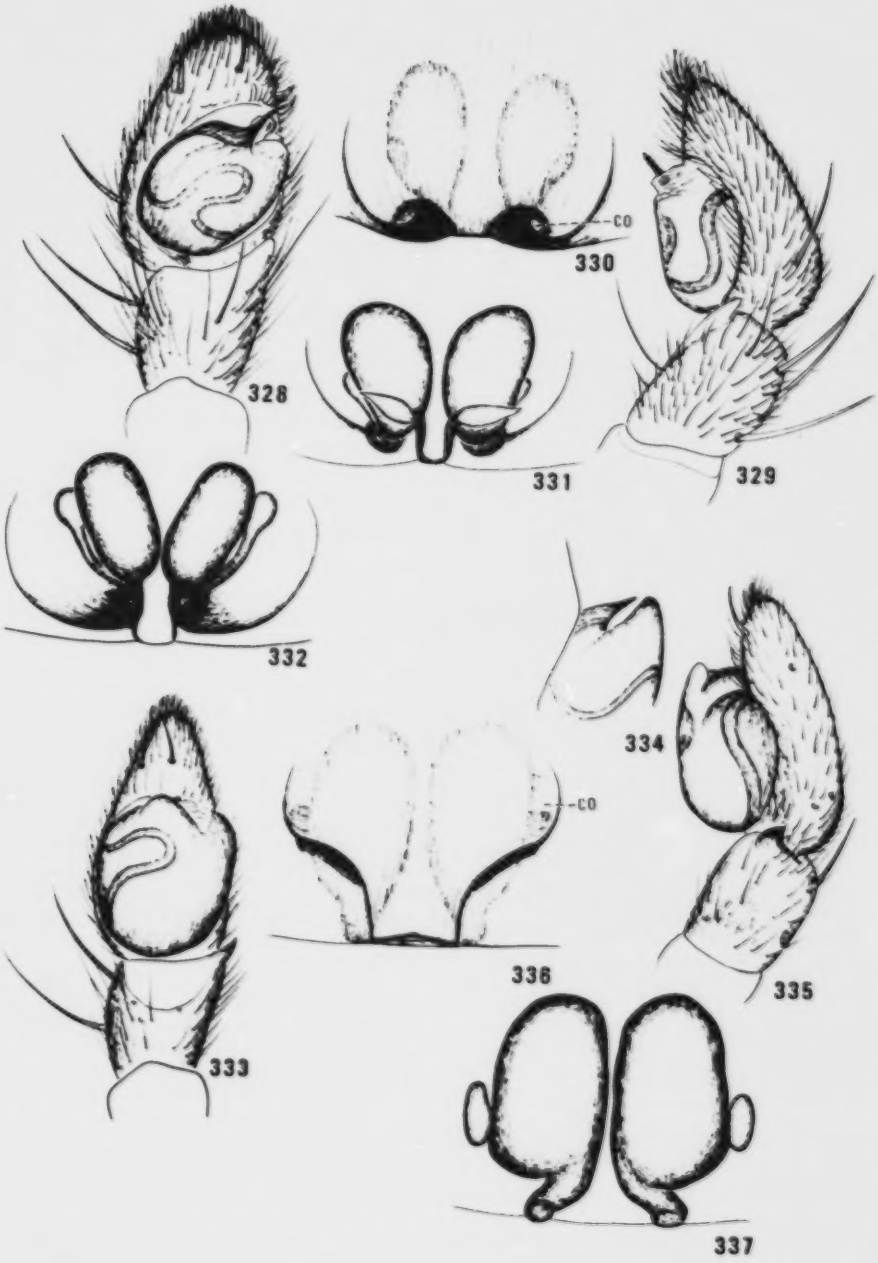
Figs. 63, 73, 328–332; Map 22

Aranea oblonga Walckenaer, 1802:228.
Tibellus oblongus: Gertsch 1933*a*:3, figs. 1–3.

Male. Total length approximately 7.00 mm; carapace 2.62 ± 0.34 mm long, 2.19 ± 0.20 mm wide (15 specimens measured). Carapace yellow, with brown midstripe. Legs yellow, without bands or rings; tibia I with three pairs of ventral macrosetae. Dorsum of abdomen yellow, with brown midstripe, and with pair of small black spots on posterior one-third. Palpal tibia with small fingerlike retrolateral apophysis, without ventral apophysis (Figs. 328, 329). Embolus somewhat expanded at base, not grooved or ridged, slender at tip, visible for its whole length in ventral view (Fig. 328).



Map 22. Collection localities of *Tibellus oblongus*.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Female. Total length approximately 8.00 mm; carapace 2.98 ± 0.16 mm long, 2.36 ± 0.23 mm wide (15 specimens measured). General structure and color essentially as in male (Fig. 73). Epigynum with convex lateral margins, and with copulatory openings (*co*) near posterior margin (Fig. 330). Spermathecae broadly ovoid (Figs. 331, 332).

Range. Alaska to Nova Scotia, southward to Mexico; Europe, Asia, North Africa.

Comments. The slender-tipped fully exposed embolus (ventral view) and the fingerlike retrolateral apophysis on the palpal tibia of males, and the position of the copulatory openings and the convex lateral margins of the median septum of females, distinguish specimens of *T. oblongus* from those of *T. gertschi* and similar species. The habitat is tall grass.

Tibellus gertschi Chamberlin & Ivie

Figs. 333–337; Map 23

Tibellus gertschi Chamberlin & Ivie, 1942:81, figs. 230, 231.

Male. Total length approximately 5.60 mm; carapace approximately 2.50 mm long, 2.15 mm wide (one specimen measured). Carapace yellow, with dusky midstripe. Legs yellow, with up to three diffuse dusky longitudinal bands along dorsal surface, and sometimes with fine dark speckles; tibia I with three pairs of ventral macrosetae. Dorsum of abdomen yellow, with dusky midstripe, and with pair of small black spots on posterior one-third. Palpal tibia with small retrolateral apophysis (Fig. 335). Embolus small, almost completely hidden in ventral view by lobe of tegulum (Figs. 333, 334).

Female. Total length approximately 8.50 mm; carapace 2.35–3.30 mm long, 2.05–2.80 mm wide (five specimens measured). General structure and color essentially as in male. Epigynum with sinuous lateral margins, and with copulatory openings (*co*) at lateral margins (Fig. 336). Spermathecae kidney-shaped, with mesal edges close together for much of their length (Fig. 337).

Range. Alaska to Ontario, southward to Utah.

Comments. The small and nearly hidden embolus of males and the sinuous epigynal margins and lateral position of the copulatory openings of females, as well as the striped legs of both sexes, distinguish specimens of *T. gertschi* from those of *T. oblongus*. The habitat is tall grass.

Figs. 328–337. Genitalia of *Tibellus* spp. 328–332, *T. oblongus*. 328, Palpus of male, ventral view; 329, Palpus of male, retrolateral view; 330, Epigynum; 331 and 332, Spermathecae. 333–337, *T. gertschi*. 333, Palpus of male, ventral view; 334, Embolus of male, prolateral view; 335, Palpus of male, retrolateral view; 336, Epigynum; 337, Spermathecae. *co*, copulatory opening.

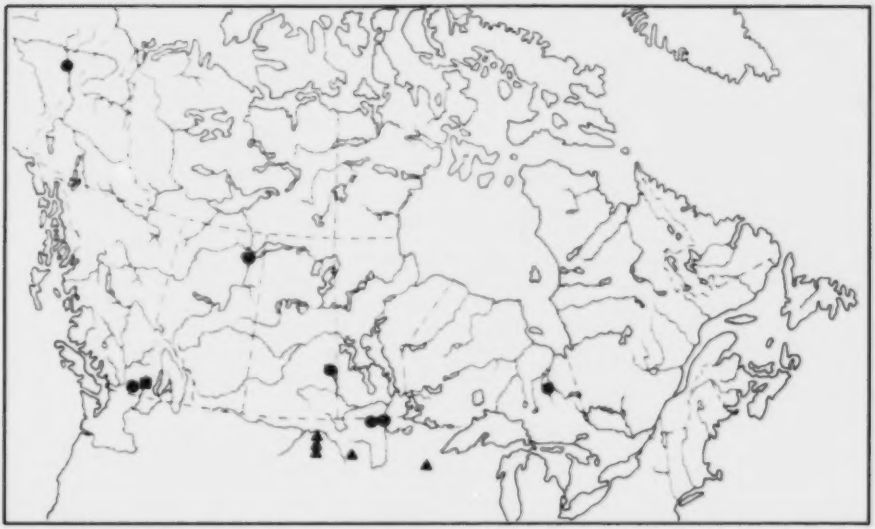
Tibellus chamberlini Gertsch

Figs. 338–342; Map 23

Tibellus chamberlini Gertsch, 1933*a*: 10, figs. 7–9, 14.

Male. Total length approximately 7.00 mm; carapace 2.55–2.70 mm long, 2.00–2.30 mm wide (four specimens measured). Carapace yellow, with dusky midstripe, with pair of lateral stripes near margins. Legs yellow, without bands or rings; tibia I with four pairs of ventral macrosetae. Dorsum of abdomen yellow, with pair of dusky longitudinal stripes, and with one or two pairs of small black spots near posterior end. Palpal tibia with apophyses very small or absent (Figs. 338, 340). Embolus somewhat swollen at base, with notch in margin distinctly visible in ventral view (Fig. 338).

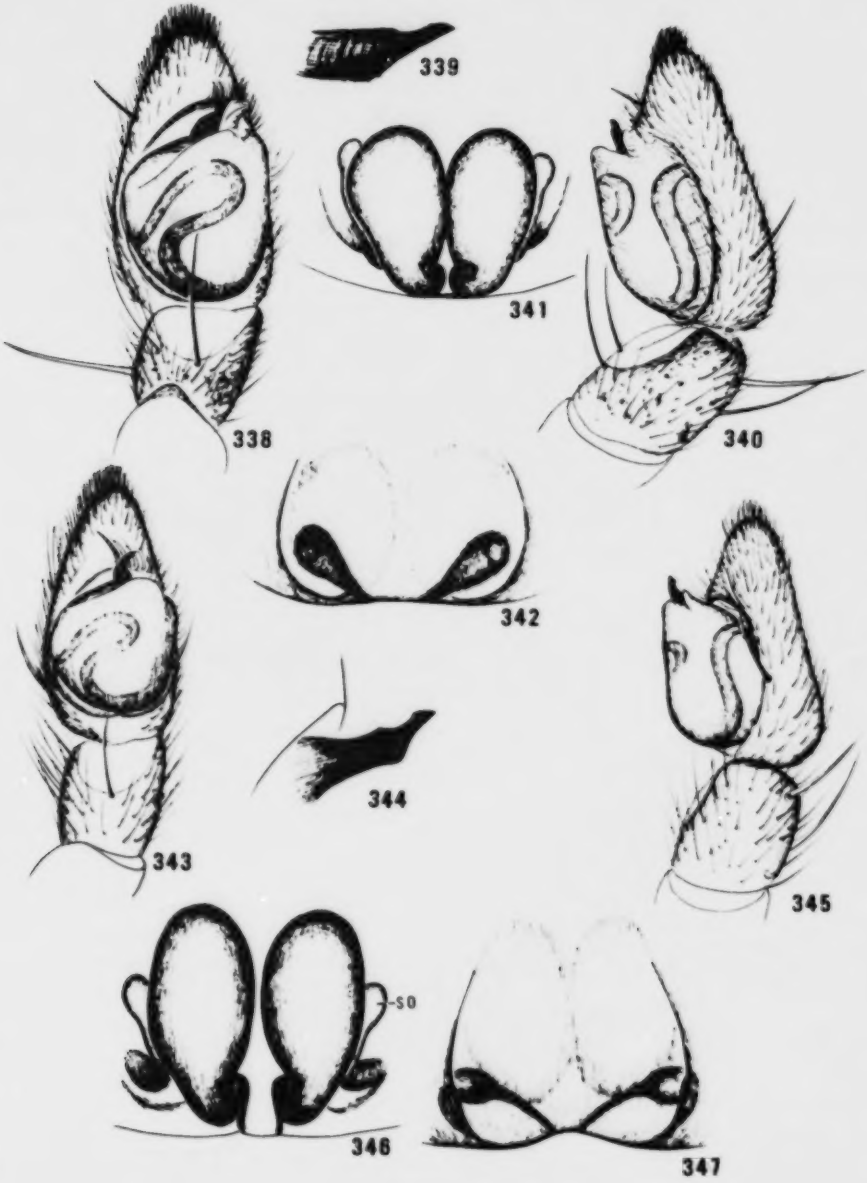
Female. Total length approximately 10.50 mm; carapace approximately 3.15 mm long, 2.38 mm wide (one specimen measured). General structure and color essentially as in male. Epigynum with copulatory openings at or



Map 23. Collection localities of *Tibellus gertschi* (●), *T. chamberlini* (■), and *T. duttoni* (▲).

Figs. 338–347. Genitalia of *Tibellus* spp. 338–342, *T. chamberlini*. 338, Palpus of male, ventral view; 339, Embolus of male, prolateral view; 340, Palpus of male, retrolateral view; 341, Spermathecae; 342, Epigynum. 343–347, *T. duttoni*. 343, Palpus of male, ventral view; 344, Embolus of male, prolateral view; 345, Palpus of male, retrolateral view; 346, Spermathecae; 347, Epigynum. *so*, spermathecal organ.

close to lateral margins (Fig. 342). Spermathecae approximately pear-shaped, with spermathecal organs extending nearly to anterior ends of spermathecae (Fig. 341).



Range. British Columbia, southward to California and Arizona.

Comments. The basally expanded, notched embolus of males and the long spermathecal organs of females, as well as the paired lateral stripes on the abdomen of both sexes, distinguish specimens of *T. chamberlini* from those of *T. duttoni*. The habitat is tall grass.

Tibellus duttoni (Hentz)

Figs. 343–347; Map 23

Thomisus duttoni Hentz, 1847:448, fig. 10 (pl. 23).
Tibellus duttoni: Gertsch 1933*a*:11, figs. 4–6.

Male. Total length approximately 6.00 mm; carapace approximately 3.00 mm long, 2.25 mm wide (one specimen measured). Carapace yellow, with dusky midstripe, and with pair of lateral stripes. Legs yellow, without bands or rings; tibia I with four pairs of ventral macrosetae. Dorsum of abdomen yellow, with dusky midstripe, and with one or two pairs of small black spots near posterior end. Palpal tibia with apophyses very small or absent (Figs. 343, 345). Embolus slender, hooked, with notch in margin, not distinctly visible in ventral view (Fig. 343).

Female. Total length approximately 8.00 mm; carapace 2.60–3.55 mm long, 1.80–2.75 mm wide (six specimens measured). General structure and color essentially as in male. Epigynum with copulatory openings at or close to lateral margins (Fig. 347). Spermathecae approximately ovoid, with mesal margins close together at middle, and with spermathecal organs (*so*) extending only two-thirds length of spermathecae (Fig. 346).

Range. Mexico to Florida, northward to North Dakota and New England.

Comments. The slender indistinctly notched embolus of males and the short spermathecal organs of females, as well as the lack of paired lateral stripes in both sexes, distinguish specimens of *T. duttoni* from those of *T. chamberlini*. The habitat is tall grass.

Genus Apollophanes O. Pickard-Cambridge

Spiders of this genus are flattened, long-legged, and speckled. They inhabit low plants or ground habitats in the mountains and plateaus of Western Canada, United States, and the American subtropics and tropics. Nothing is known of their biology.

Description. Total length approximately 6.80 mm. Carapace longer than wide, rather low, orange brown. Eyes uniform in size, with the posterior row slightly recurved; posterior median eyes slightly closer to posterior lateral

eyes than to each other. Legs long, slender, laterigrade, with dense scopulae, orange brown to nearly black; basitarsus I with prolateral and retrolateral macrosetae. Abdomen broad and flat dorsally, weakly angulate or rounded at sides; dorsum with heart mark and chevrons. Palpal tibia of male with fairly simple retrolateral and ventral apophyses appressed together. Embolus slender, hooked, arising at distal end of tegulum. Epigynum of female with smooth median septum, and with rather conspicuous elongate copulatory openings located laterad. Spermathecae kidney-shaped or ovoid, each with prominent spermathecal organ.

Comments. Representatives of the genus *Apollophanes* differ from those of *Ebo* and *Philodromus* by having uniformly spaced posterior eyes, and from those of *Tibellus* by lacking the elongated body and distinctive midstripe. Basitarsus I in specimens of *Apollophanes* has prolateral and retrolateral macrosetae (Fig. 70), whereas specimens of *Thanatus* spp. usually have neither (Fig. 69). Leg I is longer than leg IV. The appressed tibial apophyses on the male palpus are distinctive (*ra*, *va*) (Figs. 348, 349).

This genus comprises 10 New World species (Dondale & Redner 1975*b*). One species has been recorded in Canada.

Apollophanes margareta Lowrie & Gertsch

Figs. 64, 70, 348–352; Map 24

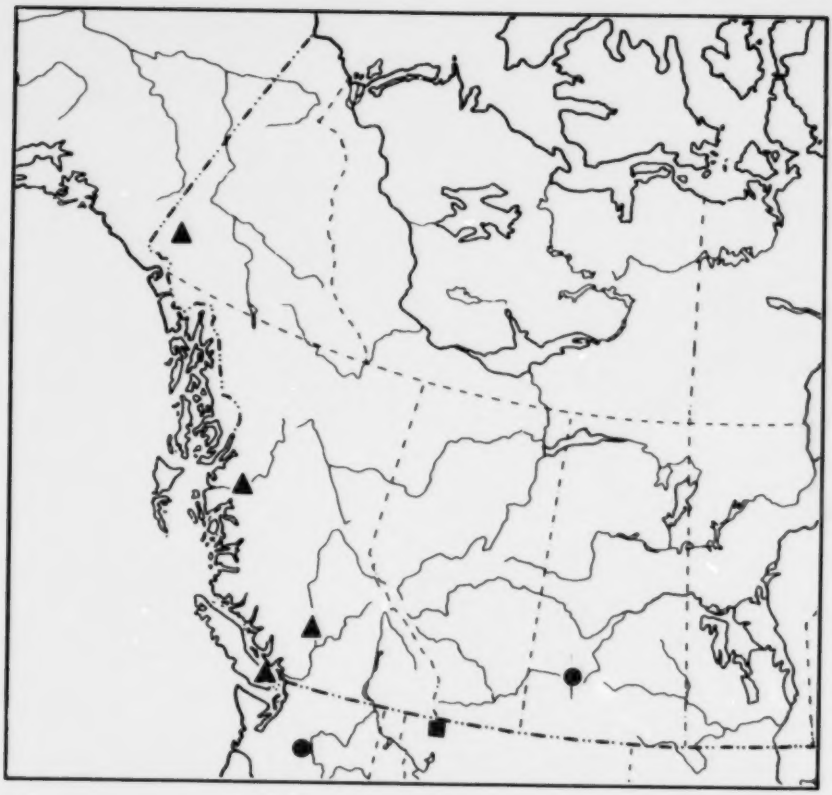
Apollophanes margareta Lowrie & Gertsch, 1955:16, figs. 10–12; Dondale & Redner 1975*b*:1184, figs. 8, 10, 33–35.
Pelloctanes margareta: Schick 1965:90, figs. 117–120.

Male. Total length approximately 6.80 mm; carapace 2.67 ± 0.33 mm long, 2.58 ± 0.34 mm wide (20 specimens measured). Carapace orange brown, with many thin dark lines, and with dark V anterior to dorsal groove. Legs orange brown to nearly black, streaked or spotted with dark brown or black. Dorsum of abdomen with purple brown heart mark, and with chevrons on yellow background. Palpal tibia with stout pointed retrolateral apophysis, and with small ventral apophysis appressed to its base (Figs. 348, 349). Embolus short, curved, arising broadly at prolaterodistal angle of tegulum (Fig. 348); tegulum bulged.

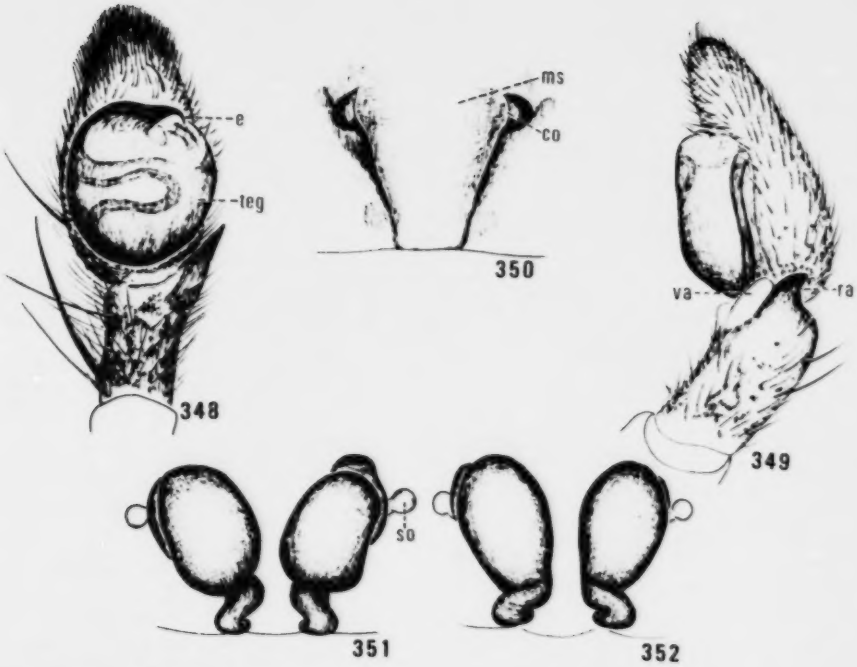
Female. Total length approximately 7.75 mm; carapace 3.11 ± 0.34 mm long, 2.98 ± 0.29 mm wide (20 specimens measured). General structure and color essentially as in male. Epigynum with broad flat median septum (*ms*); copulatory openings (*co*) short, cuplike (Fig. 350). Spermathecae kidney-shaped, each with prominent spermathecal organ (*so*) on lateral side (Figs. 351, 352).

Range. British Columbia to California, Arizona, and New Mexico.

Comments. Specimens of *A. margareta* have been collected from juniper and similar plants at elevations up to 2600 m.



Map 24. Collection localities of *Apollophanes margareta* (▲), *Thanatus altimontis* (●), and *T. patricia* (■).



Figs. 348–352. Genitalia of *Apollophanes margareta*. 348, Palpus of male, ventral view; 349, Palpus of male, retrolateral view; 350, Epigynum; 351 and 352, Spermathecae. *co*, copulatory opening; *e*, embolus; *ms*, median septum; *ra*, retrolateral apophysis; *so*, spermathecal organ; *spt*, spermatheca; *teg*, tegulum; *va*, ventral apophysis.

Genus *Thanatus* C.L. Koch

Spiders of the genus *Thanatus* possess the least flattened bodies and the least laterigrade legs of any of the known crab spiders. They are sometimes confused with members of the family Lycosidae, or wolf spiders. They are less agile than the plant dwellers of the genera *Philodromus*, *Tibellus*, and *Apollophanes* and are found on open ground or clinging to objects such as logs and stones. Their colors are drab.

Description. Total length approximately 6.00 mm. Carapace rather convex, slightly longer than wide, smoothly convex at lateral margins, usually red brown on lateral areas. Eyes uniform in size, with posterior row moderately recurved; posterior eyes uniformly spaced. Legs approximately equal in length (though II and IV slightly longer than I and III) rather stout, scopulate, usually yellow brown, without dark bands; basitarsus I usually lacking prolateral and retrolateral macrosetae. Abdomen widest near middle, rounded at sides, not flattened dorsad, with conspicuous dark heart mark on yellow or

red background, and without chevrons. Palpal tibia of male with stout retrolateral apophysis extending to ventral side where it forms a ridge or cusp, and without ventral apophysis. Embolus arising on distensible base close to alveolar wall, more rarely in simple fashion from prolateral margin of tegulum. Epigynum of female with broad flat median septum (rarely concave), and with slitlike copulatory openings at its sides. Spermathecae slender to broad, smooth or with shallow grooves, usually close together, each with small spermathecal organ usually located at anterior end.

Comments. Representatives of *Thanatus* spp. (Fig. 65) are similar to those of *Apollophanes* spp. in general structure and color. The differences are the absence, in most cases, of the prolateral and retrolateral macrosetae on basitarsus I (Fig. 69) in *Thanatus*, the stout ventrally extended retrolateral apophysis on the male palpal tibia (Fig. 359), the membranous area at the base of the embolus (*e*) (Fig. 359), and the spermathecal organs (Fig. 363), which are usually located at the anterior ends of the spermathecae.

The world fauna of *Thanatus* comprises approximately 68 species, eight of which occur in North America (Dondale et al. 1964). All eight species are represented or are assumed to be represented in Canada.

Key to species of *Thanatus*

1. Embolus (*e*) of male short, slightly curved (Fig. 359). Spermathecae of female with one or more surface grooves (Figs. 357, 363) 2

   Embolus (*e*) of male long, strongly curved (Figs. 404, 408). Spermathecae without surface grooves (Figs. 405, 409) 7

2(1). Body 5 mm or less in length, dark, hairy. Femur II length usually less than carapace width. Spermathecae of female slender, well-separated, with one transverse groove (Fig. 357) ..... ***striatus*** **C.L. Koch,** p. 109

   Body more than 5 mm in length, not dark or hairy. Femur II length usually greater than carapace width. Spermathecae of female not slender or well-separated, usually with more than one groove (Figs. 363, 374) 3

3(2). Embolus straight except for slight curve toward tip, without small notch in margin at base (Figs. 358, 359, 364, 365); male palpal tibia with two to four dorsal setae. Spermathecae with network of surface grooves (Figs. 363, 369) 4

   Embolus not straight, with small notch in margin at base (Figs. 370, 375); male palpal tibia with one (rarely two) dorsal seta. Spermathecae without network of grooves, usually with transverse grooves (Figs. 374, 386) 5

4(3). Male palpus with tip of retrolateral tibial apophysis directed dorsad (Fig. 360). Spermathecae usually slender, elongate, with numerous grooves (Figs. 362, 363) ..... ***coloradensis*** **Keyserling,** p. 112

Male palpus with tip of retrolateral tibial apophysis directed distad (Fig. 366). Spermathecae usually stout, rather angular, with sparse grooves (Figs. 368, 369) ..... ***formicinus*** **(Clerck),** p. 113

5(3). Embolus of male short, slightly curved (Fig. 370). Spermathecae rounded anteriad, slender posteriad (Fig. 374) ..... ***altimontis*** **Gertsch,** p. 116

Embolus of male longer, more strongly curved (Figs. 375, 394). Spermathecae rounded anteriad and posteriad (Figs. 386, 402) 6

6(5). Cymbium of male palpus with one (rarely two) stout dorsal seta, and with slender retrolateral apophysis on palpal tibia (Figs. 377–383). Spermathecae usually rounded anteriad and posteriad (Figs. 386–393). Carapace with three reddish longitudinal bands; abdomen with two similar bands (Fig. 65). Species temperate in range ..... ***rubicellus*** **Mello-Leitão,** p. 116

Cymbium of male palpus with two to six stout dorsal setae, and with stout retrolateral apophysis on palpal tibia (Figs. 397, 398). Spermathecae usually more acute anteriad and posteriad (Figs. 399, 400, 402, 403). Carapace and abdomen without longitudinal bands. Species low arctic in range ..... ***arcticus*** **Thorell,** p. 119

7(1). Embolus (*e*) of male with stout prominence at base (Fig. 404). Epigynum with long atrium (*at*), and with depressed median septum (*ms*) (Fig. 406); spermathecal organs (*so*) arising anterolaterad on spermathecae (Fig. 405) ..... ***vulgaris*** **Simon,** p. 120

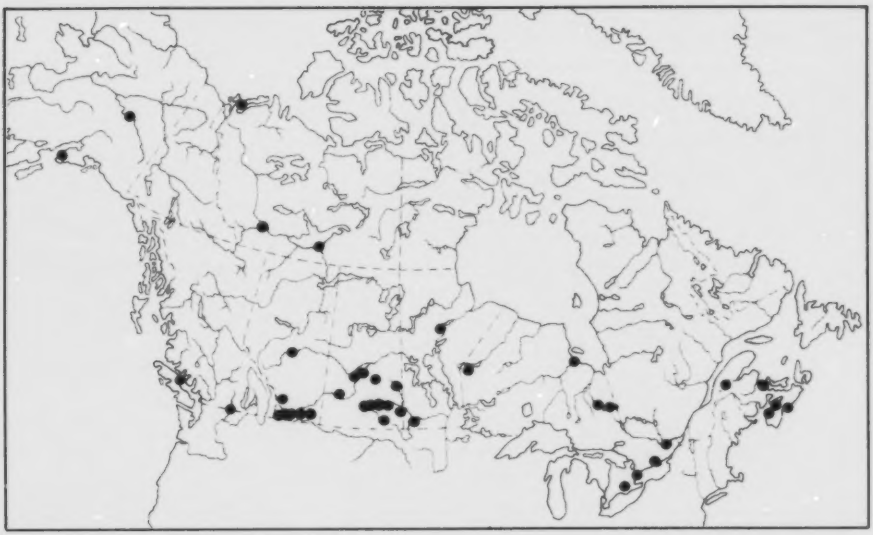
Embolus (*e*) of male without prominence at base (Fig. 408). Epigynum of female with short atrium, and with level median septum (Fig. 410). Spermathecal organs arising anteromesad on spermathecae (Fig. 409) ..... ***patricia*** **(Lowrie & Gertsch),** p. 122

Thanatus striatus C.L. Koch

Figs. 353–357; Map 25

Thanatus striatus C.L. Koch, 1845:92, fig. 1022; Dondale et al. 1964: 640, figs. 19–21, 33, 34.
Philodromus hirsutus O. Pickard-Cambridge, 1863:8565.
Thanatus ursus Simon, 1875:319.
Thanatus walteri Gertsch, 1933*b*:6, figs. 6, 47.

Male. Total length approximately 3.50 mm; carapace 1.60 ± 0.23 mm long, 1.50 ± 0.20 mm wide (12 specimens measured). Carapace gray in living specimens, but with dark brown longitudinal band on each lateral area and pale median band including dark line that widens anteriad in alcohol. Legs yellow brown, noticeably bristly, often finely speckled with brown along prolateral and dorsal surfaces. Dorsum of abdomen with long narrow dark heart mark flanked by pair of dark bands extending to anal tubercle. Palpal tibia with short fingerlike retrolateral apophysis extending to ventral side as a short process (Figs. 354, 355). Embolus (*e*) short, thick, curved (Fig. 354).



Map 25. Collection localities of *Thanatus striatus*.

Figs. 353–363. Genitalia of *Thanatus* spp. 353–357, *T. striatus*. 353, Palpus of male, prolateral view; 354, Palpus of male, ventral view; 355, Palpus of male, retrolateral view; 356, Epigynum; 357, Spermathecae. 358–363, *T. coloradensis*. 358, Palpus of male, prolateral view; 359, Palpus of male, ventral view; 360, Palpus of male, retrolateral view; 361, Epigynum; 362, Spermatheca; 363, Spermathecae. *e*, embolus; *ra*, retrolateral apophysis; *teg*, tegulum.

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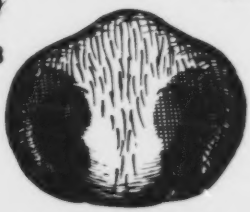

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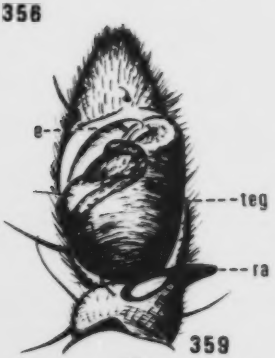

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Female. Total length approximately 4.50 mm; carapace 1.79 ± 0.18 mm long, 1.66 ± 0.17 mm wide (20 specimens measured). General structure and color essentially as in male. Epigynum with wide median septum that is convex at lateral margins (Fig. 356). Spermathecae small, slender, parallel, well-separated (Fig. 357).

Range. Alaska to Nova Scotia, southward to California and Connecticut; Europe.

Comments. The small size and bristly body will separate specimens of *T. striatus* from those of the other species in the genus. The thick embolus of males and wide median septum of females are also diagnostic. Collections are from grassland litter, though occasional specimens are taken by sweep nets in low vegetation.

Thanatus coloradensis Keyserling

Figs. 358–363; Map 26

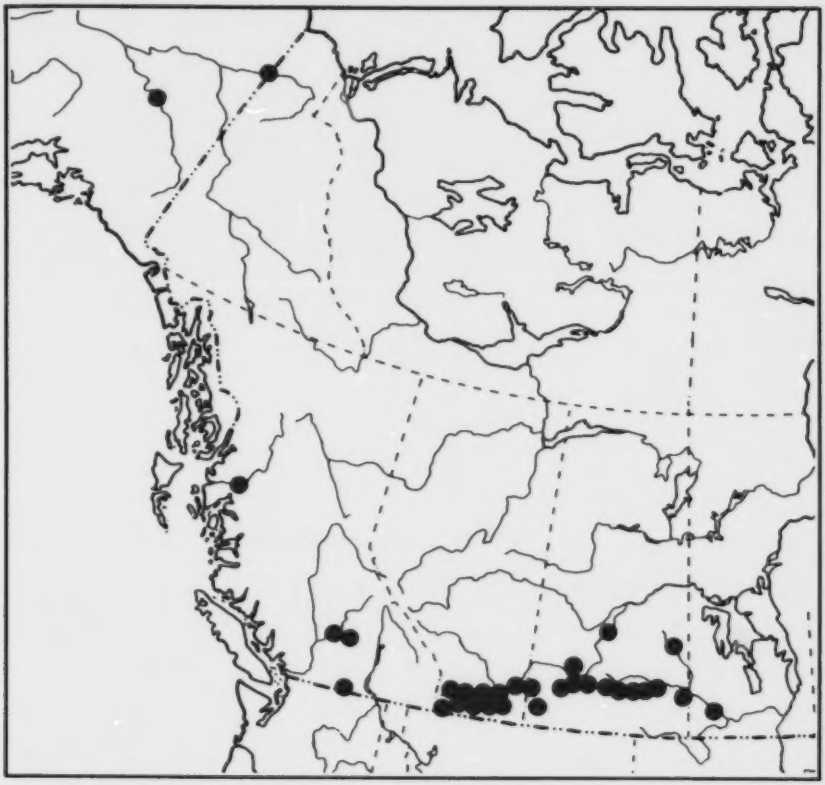
Thanatus coloradensis Keyserling, 1880:206, fig. 113 (pl. 5); Dondale et al. 1964:643, figs. 22–24, 38–40.
Thanatus alpinus Kulczynski, 1887:304, figs. 13, 14.

Male. Total length approximately 6.00 mm; carapace 2.88 ± 0.32 mm long, 2.68 ± 0.28 mm wide (13 specimens measured). Carapace spotted and streaked with brown; pale median area enclosing dark triangular spot posteriad, a few brown lines anteriad, and usually white V anterior to dorsal groove. Legs uniformly brown to red brown. Dorsum of abdomen brown yellow, with distinct heart mark, and often with paired dentate marks posteriorly. Palpal tibia with triangular laterally bent retrolateral apophysis (Fig. 360). Embolus thin, nearly straight, arising on soft lobe of tegular wall (Figs. 358, 359); tegulum with prominence in space between arms of seminal canal (Figs. 358, 359).

Female. Total length approximately 8.00 mm; carapace 3.17 ± 0.27 mm long, 2.91 ± 0.26 mm wide (33 specimens measured). General structure and color essentially as in male. Epigynum with median septum parallel or converging at lateral margins posteriad (Fig. 361). Spermathecae usually elongate, close together, with numerous surface grooves, sloped abruptly anterolaterad (Figs. 362, 363).

Range. Alaska to Manitoba, southward to California and Oklahoma; Europe.

Comments. The triangular laterally bent retrolateral apophysis on the palpal tibia and the tegular prominence distinguish male *T. coloradensis* from male *T. formicinus*. The spermathecae of female *coloradensis* are usually rather elongate and well grooved, and usually have abruptly sloped anterolateral angles. Specimens have been collected among stones and in grass in alpine meadows and forests, and in pitfall traps on cultivated land.



Map 26. Collection localities of *Thanatus coloradensis*.

Thanatus formicinus (Clerck)

Figs. 62, 69, 364–369; Map 27

Araneus formicinus Clerck, 1757:134, fig. 2 (pl. 6).
Aranea rhomboica Walckenaer, 1802:228.
Thanatus lycosoides Emerton, 1892:379, figs. 6–6*c* (pl. 32).
Thanatus canadensis Gertsch, 1933*b*:3, figs. 7, 49.
Thanatus formicinus: Dondale et al. 1964:644, figs. 28–30, 35–37.

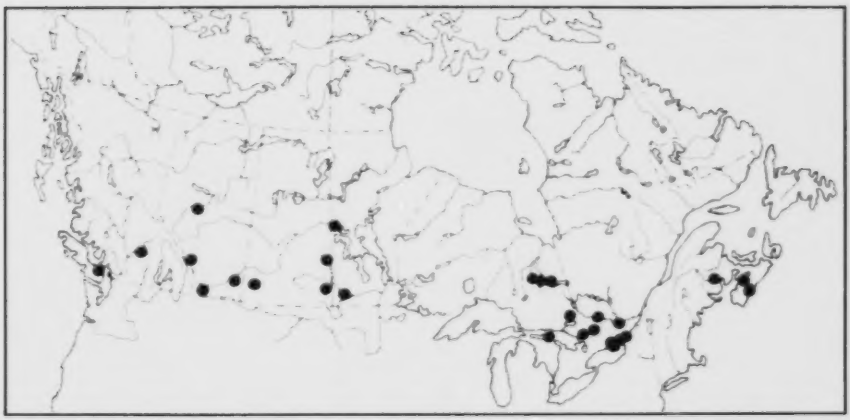
Male. Total length approximately 6.00 mm; carapace 2.78 ± 0.34 mm long, 2.62 ± 0.29 mm wide (34 specimens measured). Carapace spotted and streaked with red brown on yellow background; usually with pale V anterior to dorsal groove, and with indistinct dark longitudinal bands in lateral areas.

Legs uniformly brown or red brown, usually with two indistinct lines along dorsal surface. Dorsum of abdomen brown yellow, with distinct dark heart mark, and with paired dentate marks. Palpal tibia with long pointed retrolateral apophysis (Fig. 366). Embolus thin, nearly straight, arising from soft area of tegular wall (Fig. 365); tegulum without prominence between arms of seminal canal.

Female. Total length approximately 8.00 mm; carapace 3.00 ± 0.35 mm long, 2.79 ± 0.31 mm wide (71 specimens measured). General structure and color essentially as in male. Epigynum with median septum parallel or converging at lateral margins posteriad (Fig. 367). Spermathecae broad, close together, sparsely grooved, rather angular anterolaterad (Figs. 368, 369).

Range. Alaska to Nova Scotia, southward to California, Texas, and Virginia; Europe, Asia, and North Africa.

Comments. Males of *T. formicinus* are distinguished from those of *T. coloradensis* by the elongate slender retrolateral apophysis on the palpal tibia and by the absence of a swelling on the tegulum. Most females of *formicinus* have wide angular spermathecae rather than elongate sloped ones. Specimens have been collected at elevations up to 2920 m in pine, fir, or aspen forests, under stones, and in grasses and low shrubs in meadows or orchards.



Map 27. Collection localities of *Thanatus formicinus*.

Figs. 364–374. Genitalia of *Thanatus* spp. 364–369, *T. formicinus*. 364, Palpus of male, prolateral view; 365, Palpus of male, ventral view; 366, Palpus of male, retrolateral view; 367, Epigynum; 368, Spermatheca; 369, Spermathecae. 370–374, *T. altimontis*. 370, Palpus of male, prolateral view; 371, Palpus of male, ventral view; 372, Palpus of male, retrolateral view; 373, Epigynum; 374, Spermathecae.

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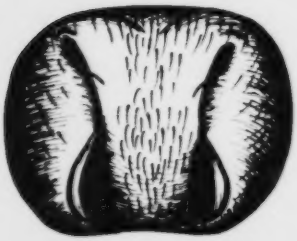

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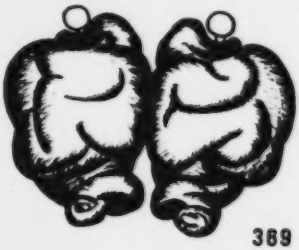

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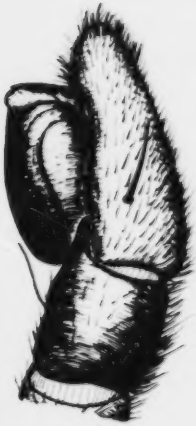

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Thanatus altimontis Gertsch

Figs. 370–374; Map 24

Thanatus altimontis Gertsch, 1933*b*:6, figs. 2, 48; Dondale et al. 1964: 647, figs. 25–27, 43, 44.

Male. Total length approximately 5.00 mm; carapace 2.06–2.22 mm long, 2.01–2.19 mm wide (three specimens measured). Carapace with red brown streaks and spots or indistinct longitudinal bands, and with red brown triangular spot and pale V anterior to dorsal groove. Legs usually pale brown yellow, with two brown lines along dorsal surface. Dorsum of abdomen with red brown heart mark, and usually with pair of dark indented lateral lines on pale background. Palpal tibia with moderately long slender retrolateral apophysis (Fig. 372). Embolus short, slightly curved, arising on soft lobe of tegulum (Figs. 370, 371).

Female. Total length approximately 6.00 mm; carapace 2.27 ± 0.25 mm long, 2.20 ± 0.23 mm wide (27 specimens measured). General structure and color essentially as in male. Epigynum with median septum widening in anterior one-third, and with wide copulatory openings (Fig. 373). Spermathecae rather small, wider and thicker anteriad, close together, with single transverse groove (Fig. 374).

Range. Washington to Nebraska, southward to California and Oklahoma.

Comments. The short slightly curved embolus of males and the small smooth tapered spermathecae of females distinguish specimens of *T. altimontis* from those of other species. Specimens have been collected in sagebrush and under stones in mountainous country up to 3000 m in altitude.

Thanatus rubicellus Mello-Leitão

Figs. 65, 375–393; Map 28

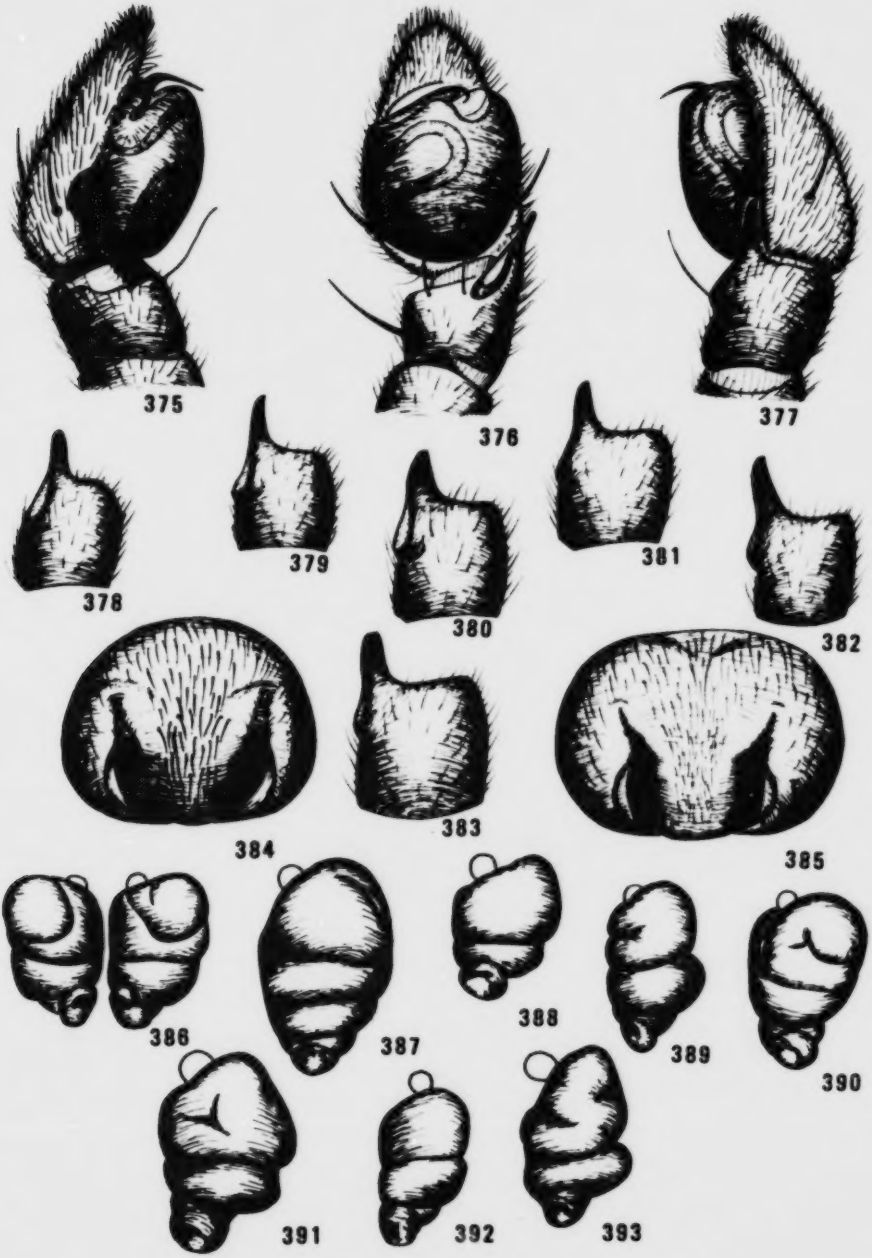
Thanatus rubicundus Keyserling, 1880:204, fig. 112 (pl. 5).

Thanatus rubicellus Mello-Leitão, 1929:271 (new name for *T. rubicundus* Keyserling, preoccupied in genus *Thanatus*); Dondale et al. 1964:648, figs. 5–13, 45–54.

Thanatus rowani Gertsch, 1933*b*:5, fig. 9.

Male. Total length approximately 5.00 mm; carapace 2.73 ± 0.32 mm long, 2.53 ± 0.28 mm wide (28 specimens measured). Carapace with one mesal and two lateral dull red longitudinal bands, and usually with white V

Figs. 375–393. Genitalia of *Thanatus rubicellus*. 375, Palpus of male, prolateral view; 376, Palpus of male, ventral view; 377, Palpus of male, retrolateral view; 378–383, Palpal tibia of male, retrolateral view; 384 and 385, Epigynum; 386, Spermathecae; 387–393, Spermatheca.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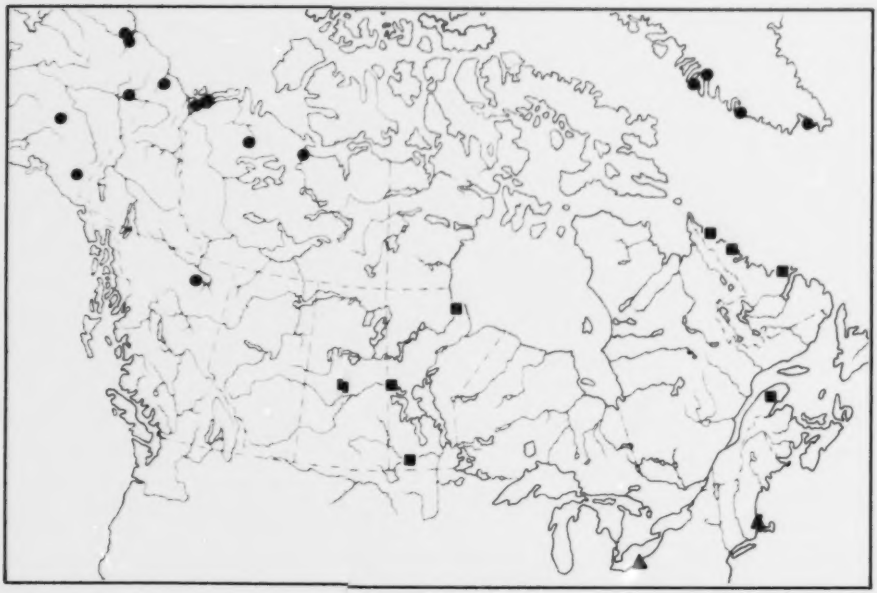
anterior to dorsal groove. Legs yellow to red brown, with two dull red bands along dorsal surface. Dorsum of abdomen with distinct heart mark, and usually with pair of dull red indented longitudinal bands. Palpal tibia with long slender retrolateral apophysis (Figs. 377–383). Embolus moderately long, strongly curved, arising on soft area of tegulum (Figs. 375, 376); cymbium with one (rarely two) stout dorsal seta.

Female. Total length approximately 6.00 mm; carapace 2.76 ± 0.37 mm long, 2.58 ± 0.32 mm wide (56 specimens measured). General structure and color essentially as in male. Epigynum with median septum usually slightly narrowed posteriad (Figs. 384, 385). Spermathecae rather broad throughout their length, with one or a few surface grooves (Figs. 386–393).

Range. Alberta, Quebec, and Labrador, southward to Oklahoma and Georgia.

Comments. The presence of only one stout seta on the cymbium and the relatively slender retrolateral apophysis on the palpal tibia of males, the uniformly broad spermathecae of females, and the banded carapace and abdomen of both sexes distinguish most specimens of *T. rubicellus* from those of *T. arcticus*. The characters are subject to variation, and there may be interbreeding with *arcticus*. The habitat is unrecorded.



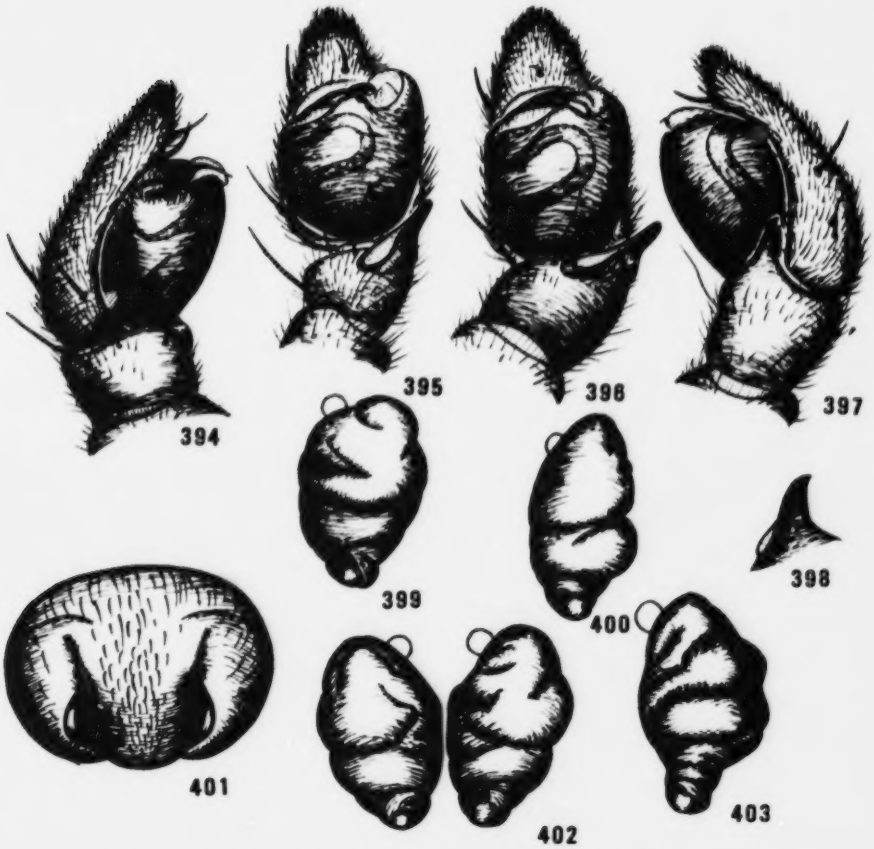
Map 28. Collection localities of *Thanatus rubicellus* (■), *T. arcticus* (●), and *T. vulgaris* (▲).

Thanatus arcticus Thorell

Figs. 394–403; Map 28

Thanatus arcticus Thorell, 1872:157; Dondale et al. 1964:651, figs. 14–18, 55–59.

Male. Total length approximately 5.00 mm; carapace 2.66–2.94 mm long, 2.59–2.79 mm wide (four specimens measured). Carapace streaked and spotted on lateral areas with red brown, marked mesad with dark triangular spot extending as narrow lines to eye area. Legs red brown, with two dark



Figs. 394–403. Genitalia of *Thanatus arcticus*. 394, Palpus of male, prolateral view; 395 and 396, Palpus of male, ventral view; 397, Palpus of male, retrolateral view; 398, Tibial apophysis of male, retrolateral view; 399, 400, and 403, Spermatheca; 401, Epigynum; 402, Spermathecae.

lines along dorsal surface. Dorsum of abdomen with dark heart mark usually flanked by white bands that meet and extend to anal tubercle, and with pair of dark bands indented posteriad. Palpal tibia with basally stout tapered retrolateral apophysis (Figs. 397, 398). Embolus long, strongly curved (Figs. 394–396); cymbium with two to six stout dorsal setae.

Female. Total length approximately 7.00 mm; carapace 2.73–2.90 mm long, 2.63–2.80 mm wide (nine specimens measured). General structure and color essentially as in male. Epigynum with median septum usually slightly narrowed posteriad (Fig. 401). Spermathecae usually rounded anteriad, somewhat tapered posteriad, close together, grooved (Figs. 399, 400, 402, 403).

Range. Alaska to Greenland in the low Arctic.

Comments. Males of *T. arcticus* can usually be distinguished from those of *T. rubicellus* by the broader retrolateral apophysis on the palpal tibia and the greater number of stout setae on the cymbium. Females of *arcticus* tend to have more acutely tapered spermathecae. The habitat is unrecorded.

Thanatus vulgaris Simon

Figs. 404–407; Map 28

Thanatus vulgaris Simon, 1870:328; Dondale et al. 1964:653, figs. 3, 4, 41, 42.

Thanatus peninsulanus Banks, 1898*a*:265, fig. 11 (pl. 16).

Thanatus retentus Chamberlin, 1919:9, fig. 5 (pl. 6).

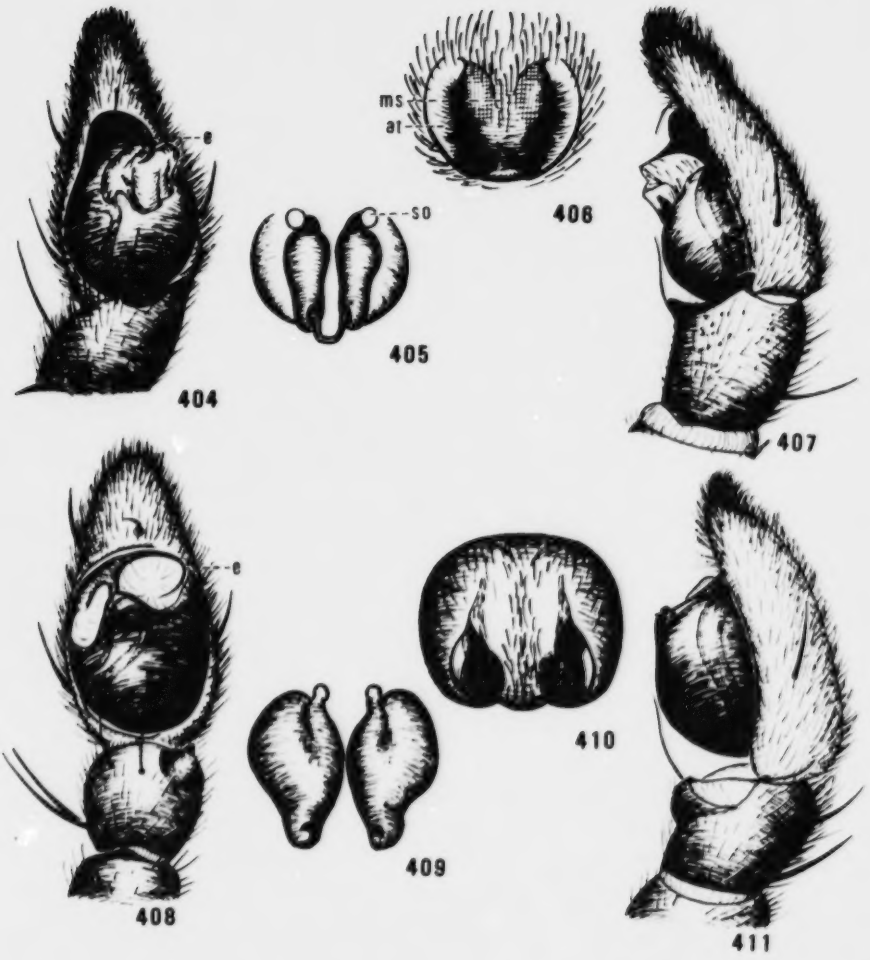
Philodromus setosus Petrunkevitch, 1929:523, fig. 21.

Male. Total length approximately 6.00 mm; carapace 2.37 ± 0.35 mm long, 2.30 ± 0.33 mm wide (12 specimens measured). Carapace yellow brown to pale red brown, reticulated with black laterad, and with pale V anterior to dorsal groove. Legs yellow, sometimes coarsely speckled with brown, and with two indistinct lines along dorsal surface. Dorsum of abdomen brown yellow, with darker heart mark, and with indistinct dark mark posteriad. Palpal tibia with short erect retrolateral apophysis (Fig. 407). Embolus short, curved, strongly tapered, with stout prominence at base arising simply at distal end of tegulum (Fig. 404).

Female. Total length approximately 8.00 mm; carapace 3.22 ± 0.37 mm long, 3.03 ± 0.33 mm wide (63 specimens measured). General structure and color essentially as in male. Epigynum with large atrium (*at*), and with median septum (*ms*) tapered and depressed posteriad; copulatory openings wide, shallow (Fig. 406). Spermathecae elongate, rather slender, smooth, usually tapered and diverging posteriad (Fig. 405).

Range. California to Mexico and Georgia, northward to Idaho, Ohio, and Massachusetts; Europe, North Africa.

Comments. Males of *T. vulgaris* are readily distinguished from those of other species by the unusually wide base of the embolus. Females are



Figs. 404–411. Genitalia of *Thanatus* spp. 404–407, *T. vulgaris*. 404, Palpus of male, ventral view; 405, Spermathecae; 406, Epigynum; 407, Palpus of male, retrolateral view. 408–411, *T. patricia*. 408, Palpus of male, ventral view; 409, Spermathecae; 410, Epigynum; 411, Palpus of male, retrolateral view. *at*, atrium; *e*, embolus; *ms*, median septum; *so*, spermathecal organ.

distinguished by the depression in the median septum of the epigynum; the spermathecae, which are unusually smooth and slender, can often be seen through this septum. Specimens of *vulgaris* have been collected from shrubs, buildings such as railroad stations, grocery stores, and restaurants, and ships at sea. The species is probably introduced in North America.

Thanatus patricia (Lowrie & Gertsch)

Figs. 408–411; Map 24

Apollophanes patricia Lowrie & Gertsch, 1955:18, figs. 25, 26, 28.
Thanatus patricia: Dondale et al. 1964:654, figs. 1, 2, 31, 32.

Male. Total length approximately 6.50 mm; carapace 2.70–2.90 mm long, 2.51–2.78 mm wide (seven specimens measured). Carapace densely streaked with brown or red brown, sometimes with yellow V anterior to dorsal groove. Legs brown yellow, with indistinct speckling along prolateral and ventral surfaces. Dorsum of abdomen brown yellow to dull purple, with indistinct heart mark, and with few scattered pale spots. Palpal tibia with short erect retrolateral apophysis (Fig. 411). Embolus thin, strongly curved (Fig. 408).

Female. Total length approximately 7.00 mm; carapace 3.01–3.29 mm long, 2.85–3.00 mm wide (three specimens measured). General structure and color essentially as in male. Epigynum with median septum tapered posteriad (Fig. 410). Spermathecae rounded anteriad, tapered posteriad, smooth, close together; spermathecal organs arising anteromesad (Fig. 409).

Range. Idaho, Montana, and Colorado.

Comments. Specimens of *T. patricia* can be distinguished from those of other species of *Thanatus* by the long slender strongly curved embolus and short retrolateral apophysis on the palpal tibia of males and by the smooth spermathecae and anteromesal spermathecal organs of females. Specimens have been collected in rockslides and moraine talus at elevations of 1500–3000 m, in lodgepole pine forests, and at the altitudinal tree line.

Family Thomisidae

Spiders of the family Thomisidae have sturdy, moderately flattened bodies and strong laterigrade legs. Their motion is even more crablike than that of the Philodromidae, being rather slow and deliberate. The more brightly colored representatives (*Misumena* spp., *Misumenoides* spp., *Misumenops* spp.) often occupy open blossoms where they ambush pollinating insects, and some can change color in accordance with the substrate. Most thomisids are drab mottled inhabitants of litter in grasslands, forests, or orchards. Their life is vagrant and solitary.

Description. Total length at maturity 1.50–11.30 mm. Carapace moderately flattened, about as long as wide, smoothly convex at lateral margins and constricted at level of leg I, various shades of yellow to black, with few erect simple or clavate setae. Eyes in two recurved transverse rows, with the posterior row more curved than the anterior row; lateral eyes of both rows often larger and seated on prominent tubercles; lateral eyes and posterior median eyes with tapetum. Legs rather stout, without scopulae or claw tufts; legs I and II always longer and thicker than legs III and IV; femur I often

armed prolaterad with several strong erect macrosetae; tarsi with two claws. Abdomen broadly oval or round in dorsal view, flattened, usually mottled or with longitudinal color bands, and with few erect simple or clavate setae. Palpal tibia of male with retrolateral, ventral, and sometimes intermediate apophyses. Embolus arising on periphery of tegulum, varying in length according to species, usually slender and hairlike, often with pars pendula, terminating against conductor (which in these spiders is a process on the cymbium); tegulum flattened, often round in ventral view, sometimes with hooklike apophyses. Epigynum of female usually with deep round atrium that is sometimes traversed from front to rear by a median septum, and sometimes with hood anterior to atrium. Copulatory tubes short and not visible in dissected specimens, sometimes longer (according to species); spermathecae usually large, strongly sclerotized, varying in shape with species.

Comments. The crablike bodies of these spiders give them a superficial resemblance to members of the Philodromidae. However, thomisids are less agile because they have stouter bodies and legs (Figs. 415, 421, 422) and lack scopulae and claw tufts (Fig. 11). The legs are of two lengths. The lateral eyes are seated on prominent tubercles (Figs. 412, 413, 418–420), and the body setae are simple, erect, and usually sparse. Life histories of a few species were described by Dondale (1977).

The Thomisidae comprise a world fauna of about 150 genera and 1450 species. Of these, nine genera and 121 species occur in North America. Seven genera and 63 species are represented or are assumed to be represented in Canada.

Key to genera of Thomisidae

1. Front (*fr*) of carapace strongly protruding. Abdomen with dorsal tubercle at posterior end (Fig. 412) ..... ***Tmarus*** **Simon,** p. 127

   Front of carapace not strongly protruding (Figs. 414, 419). Abdomen without dorsal tubercle 2

2(1). Anterior lateral eyes (*ale*) approximately equal in size to anterior median eyes (*ame*) (Fig. 416) 3

   Anterior lateral eyes larger than anterior median eyes (Fig. 417) 4

3(2). Front of carapace with white transverse ridge (Fig. 416) ..... ***Misumenoides*** **F. Pickard-Cambridge,** p. 129

   Front of carapace without white transverse ridge ..... ***Misumena*** **Latreille,** p. 131

4(2). Carapace higher at level of coxa II (*cx* II) than at level of posterior eyes (Fig. 419) 5

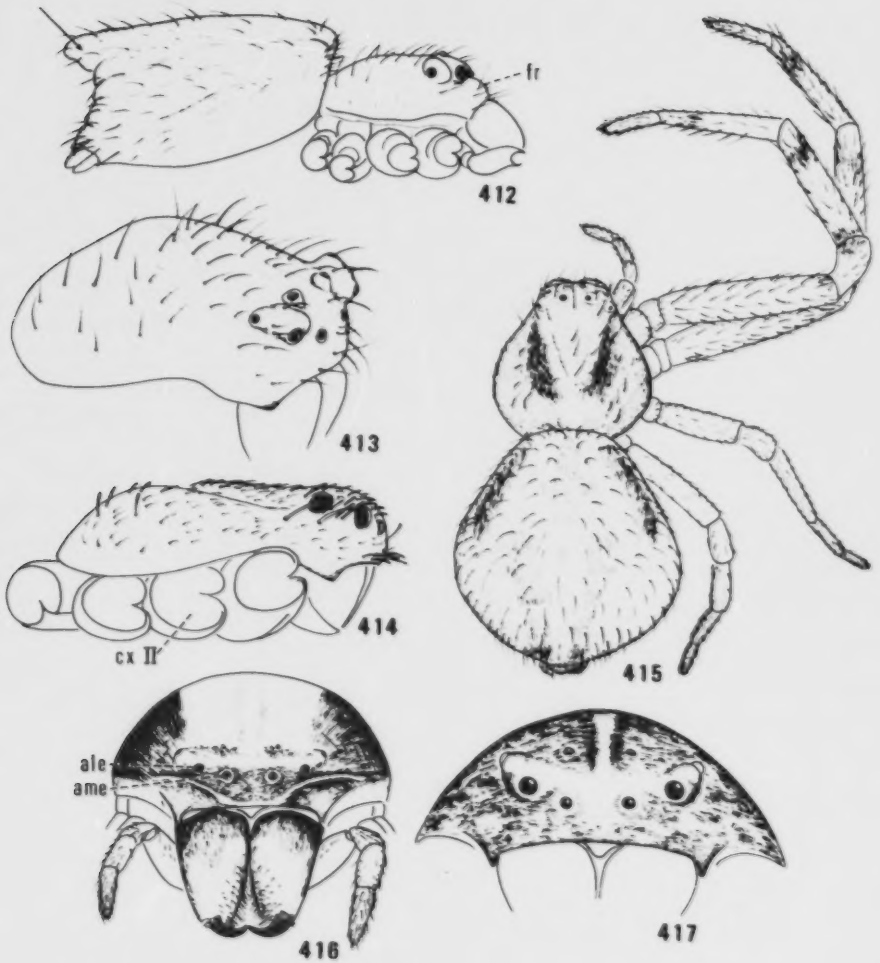
   Carapace about as high at level of coxa II as at level of posterior eyes (Fig. 414) ..... ***Coriarachne*** **Thorell,** p. 133

5(4). Lateral eyes situated on large confluent tubercles (Fig. 413). Basitarsus I lacking prolateral macrosetae (Fig. 415). Body setae tapered from base to tip (Fig. 415) ..... ***Misumenops*** **F. Pickard-Cambridge,** p. 140

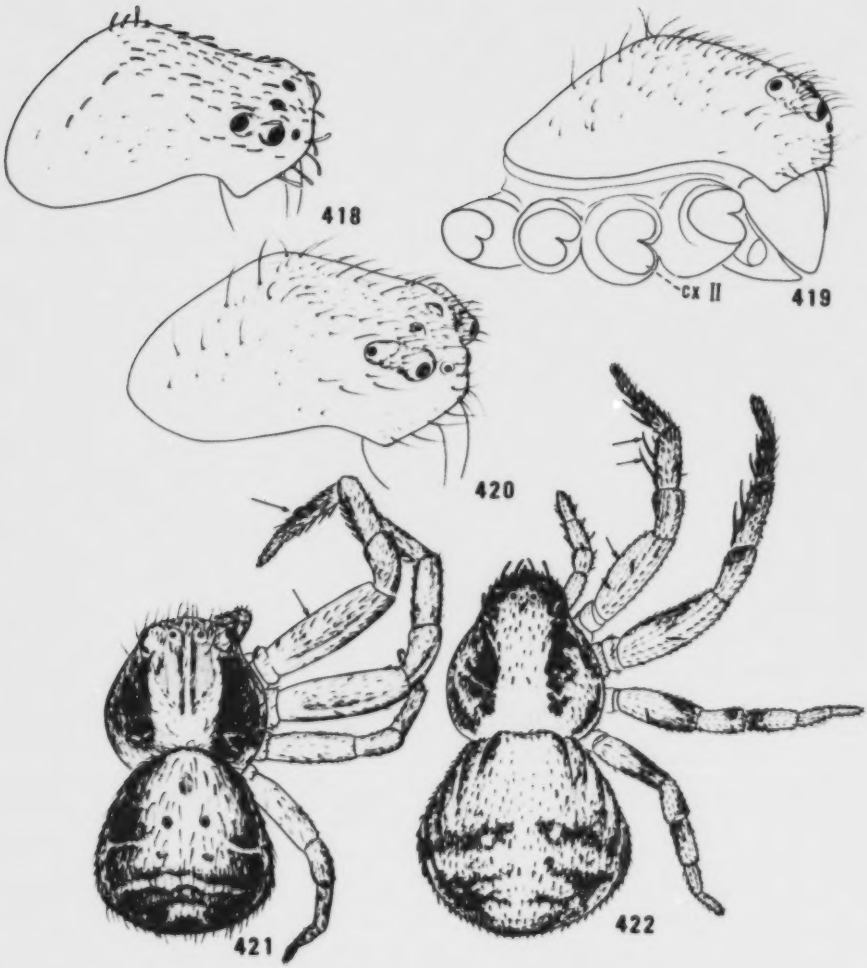
Lateral eyes situated on small discrete tubercles (Figs. 418, 420). Basitarsus I possessing one or more prolateral macrosetae (except *X. winnipegensis*) (Fig. 421) or, if none, then body setae clavate (Fig. 422) 6

6(5). Dorsum of abdomen and usually legs and carapace with clavate setae. Femur I conspicuously swollen at middle; tibia I with two pairs of ventral macrosetae (Fig. 422) ..... ***Ozyptila*** **Simon,** p. 149

Dorsum of abdomen, legs, and carapace usually without clavate setae. Femur I not conspicuously swollen at middle; tibia I with more than two pairs of ventral macrosetae (Fig. 421) ..... ***Xysticus*** **C.L. Koch,** p. 172



Figs. 412–417. Structures of Thomisidae. 412, Body of *Tmarus angulatus*, lateral view; 413, Carapace of *Misumenops asperatus*, dorsolateral view; 414, Carapace of *Coriarachne utahensis*, lateral view; 415, Body of *Misumenops asperatus*, dorsal view; 416, Carapace of *Misumenoides formosipes*, anterior view; 417, Carapace of *Xysticus elegans*, anterior view. *ale*, anterior lateral eye; *ame*, anterior median eye; *cx*, coxa; *fr*, front.



Figs. 418–422. Structures of Thomisidae. 418, Carapace of *Ozyptila sincera canadensis*, dorsolateral view; 419, Carapace of *Xysticus emertoni*, lateral view; 420, Carapace of *Xysticus emertoni*, dorsolateral view; 421, Body of *Xysticus emertoni*, dorsal view; 422, Body of *Ozyptila sincera canadensis*, dorsal view. *cx II*, coxa II.

Genus *Tmarus* Simon

Members of the genus *Tmarus* rest with their legs wrapped around a twig and their bodies pressed against it. Here they are virtually unnoticeable, partly because of their dull gray or brown coloring and also because of the prominent tubercle at the tip of the abdomen; their whole appearance resembles that of a leaf bud or scar.

Description. Total length approximately 5 mm. Carapace dark brown, rather convex dorsad, longer than wide, conspicuously produced anteriad. Eyes in two transverse recurved rows; lateral eyes larger than median eyes, seated on large separate tubercles. Legs long, pale brown, speckled, rather slender, with legs I and II longer than III and IV, without scopulae or claw tufts; tarsi with two claws. Abdomen rather angular at lateral margins, longer than wide, with conspicuous dorsal tubercle at posterior end, mottled or spotted with dull colors. Palpal tibia of male with both retrolateral and ventral apophyses. Embolus rather broad. Epigynum of female lightly sclerotized, with small hood. Spermathecae longer than wide, with surface grooves.

Comments. Members of the genus *Tmarus* are recognized by their strongly produced carapace and abdominal tubercle. About 130 species have been described for the world, only six of which occur in North America. In Canada, a single species is represented.

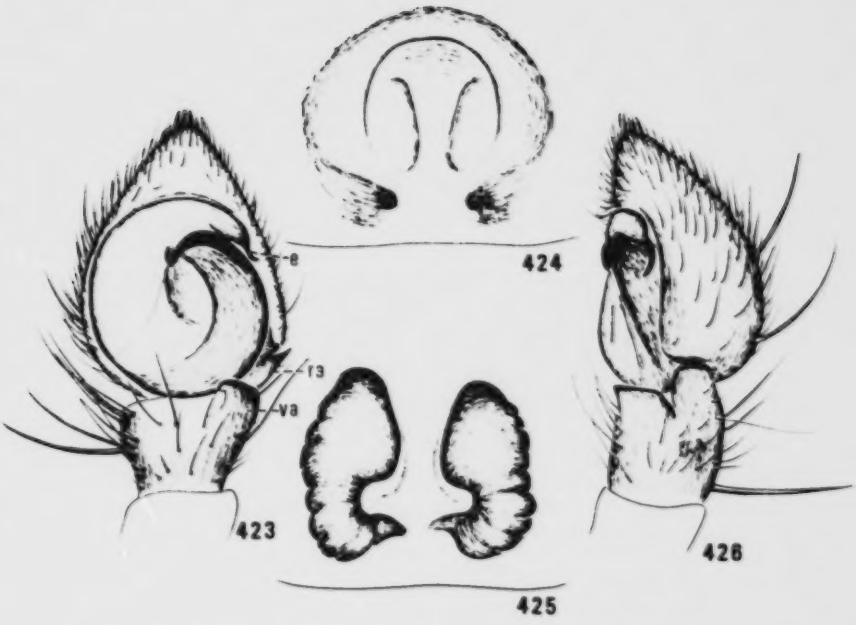
Tmarus angulatus (Walckenaer)

Figs. 412, 423–426; Map 29

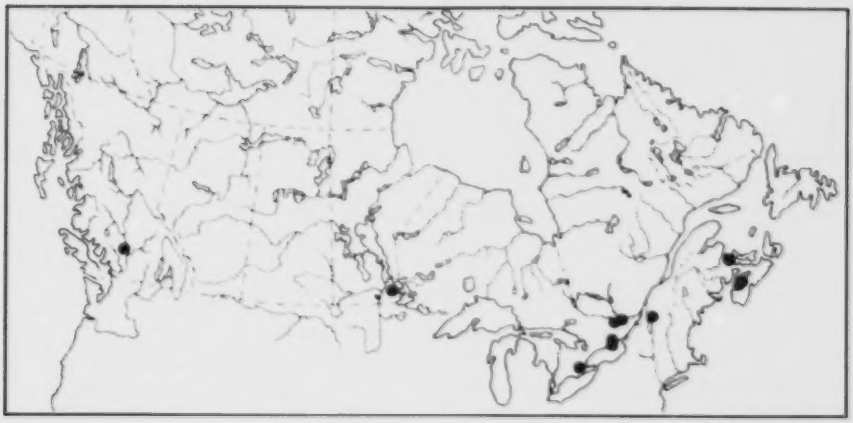
Thomisus angulatus Walckenaer, 1837:537.
Thomisus caudatus Hentz, 1847:477, fig. 9 (pl. 23).
Tmarus magniceps Keyserling, 1880:156, fig. 85 (pl. 3).
Tmarus angulatus: Gertsch 1939:305, figs. 11, 21, 22, 25.

Male. Total length approximately 4.00 mm; carapace 1.75 ± 0.12 mm long, 1.68 ± 0.13 mm wide (15 specimens measured). Carapace dark brown, with scattered black spots and lighter areas, and with tan mesal stripe. Legs pale brown, densely speckled with black. Dorsum of abdomen gray brown, speckled with dark brown, dull red laterally, with series of dull red patches mesad, and sometimes with extensive chalk white areas. Setae sparse, arising on small orange tubercles. Palpal tibia with short rounded retrolateral apophysis (*ra*), and with hooked ventral apophysis (*va*) (Figs. 423, 426). Embolus (*e*) short, broad, terminating in a short curved spur (Fig. 423).

Female. Total length approximately 6.00 mm; carapace 1.86 ± 0.08 mm long, 1.78 ± 0.08 mm wide (15 specimens measured). General structure and color essentially as in male, but abdominal tubercle much larger (Fig. 412). Epigynum rounded, somewhat sclerotized (Fig. 424). Spermathecae longer than wide, widening in anterior half, with series of shallow transverse surface grooves (Fig. 425).



Figs. 423–426. Genitalia of *Tmarus angulatus*. 423, Palpus of male, ventral view; 424, Epigynum; 425, Spermathecae; 426, Palpus of male, retrolateral view. *e*, embolus; *ra*, retrolateral apophysis; *va*, ventral apophysis.



Map 29. Collection localities of *Tmarus angulatus*.

Range. California to Florida, northward to British Columbia and Nova Scotia.

Comments. The conspicuously produced carapace and abdominal tubercle separate specimens of *T. angulatus* from those of other Thomisidae. Specimens have been collected by beating trays from the twigs of various trees and shrubs.

Genus *Misumenoides* F. Pickard-Cambridge

Members of the genus *Misumenoides* have rather large flattened pale bodies and laterigrade legs. They lie among the petals and stamens of blossoms with their large anterior legs apart in ambush. They kill pollenating insects of considerable size and suck them dry. The body is nearly devoid of erect setae, and the carapace has a transverse white ridge, or carina, on the front.

Description. Total length 2.50–11.30 mm. Carapace rather low, smoothly convex along lateral margins, pale green and white with red markings, with a few erect setae, and with a white transverse carina on front. Eyes in two transverse recurved rows, with posterior row more curved than anterior row; lateral eyes larger than median eyes, seated on large conjoined tubercles. Legs I and II much longer and thicker than legs III and IV, creamy white, without spots or bands, without dorsal or prolateral macrosetae, but with paired ventral macrosetae, and without scopulae or claw tufts; tarsi with two claws. Abdomen broad, rather flat, off-white to yellow, often with red or brown pattern, lacking erect setae. Palpal tibia of male with rather elaborate retrolateral apophysis, and with shorter simpler ventral apophysis. Embolus short, spurlike, arising near distal end of tegulum. Epigynum of female somewhat sclerotized, with shallow atrium, and with broad raised hood. Spermathecae broader than long.

Comments. Members of the genus *Misumenoides* closely resemble those of *Misumena*, but differ by having a white ridge, or carina, on the front of the carapace (Fig. 416). Approximately 20 species of this genus have been described from the New World, as well as a few from India. Two species are represented in North America, and only one in Canada.

Misumenoides formosipes (Walckenaer)

Figs. 416, 427–430; Map 35

Thomisus formosipes Walckenaer, 1837:504.
Thomisus aleatorius Hentz, 1847:444, fig. 2 (pl. 23).
Runcinia brendeli Keyserling, 1880:127, fig. 70 (pl. 2).
Misumenoides formosipes: Chamberlin & Ivie 1944:159.

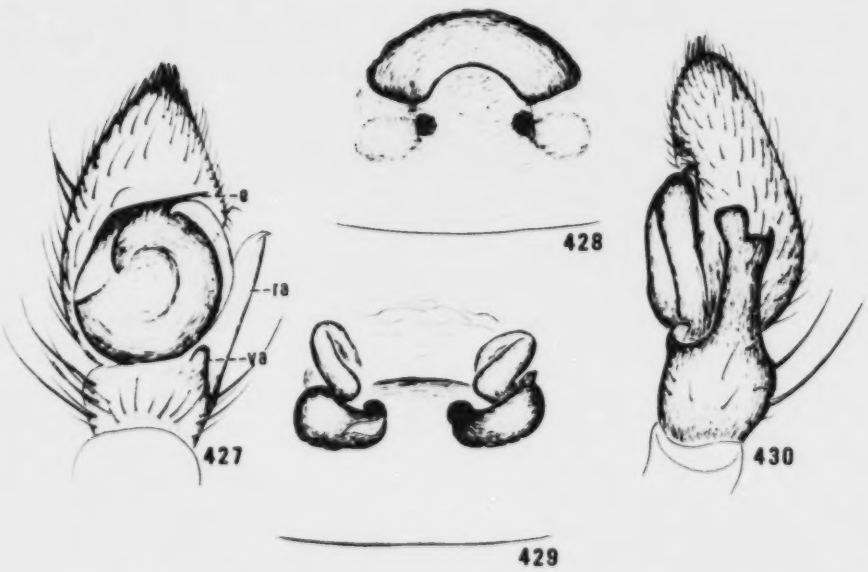
Male. Total length approximately 3.00 mm; carapace 1.49 ± 0.17 mm long, 1.55 ± 0.17 mm wide (12 specimens measured). Carapace off-white

to yellow (pale green in living specimens), with lateral areas yellow brown, and with eye area marked with bright red. Legs creamy white, usually without colored bands, lacking dorsal and prolateral macrosetae, but legs I and II with several pairs of ventral macrosetae. Dorsum of abdomen lacking erect setae, creamy white, with paired rows of purple brown spots; sides with dark band anteriad. Palpal tibia with stout hooked retrolateral apophysis (*ra*), and with shorter tuberclelike ventral apophysis (*va*) (Figs. 427, 430). Embolus (*e*) short, spurlike, arising near distal end of tegulum (Fig. 427).

Female. Total length approximately 9 mm; carapace 3.01 ± 0.30 mm long, 3.04 ± 0.29 mm wide (15 specimens measured). General structure and color essentially as in male, but much larger and paler. Epigynum somewhat sclerotized, with shallow atrium, and with broad raised hood (Fig. 428). Copulatory tubes long, folded; spermathecae smooth, broader than long, with prominent spermathecal organ at mesal extremity (Fig. 429).

Range. California to Florida, northward to the Great Lakes.

Comments. Specimens of *M. formosipes* resemble those of *Misumena vatia* in possessing few or no erect setae on carapace and abdomen, but they are distinguished from the latter by the presence of a white ridge, or carina, on the front of the carapace. Specimens have been found on flowers and foliage of many herbs, shrubs, and deciduous trees in pastures, meadows, orchards, and similar places.



Figs. 427–430. Genitalia of *Misumenoides formosipes*. 427, Palpus of male, ventral view; 428, Epigynum; 429, Spermathecae; 430, Palpus of male, retrolateral view. *e*, embolus; *ra*, retrolateral apophysis; *va*, ventral apophysis.

Genus *Misumena* Latreille

Representatives of the genus *Misumena* have pale bodies with pink or red patterns, which provide protective resemblance in flower heads. The body is low, and the anterior legs are long, powerful, and laterigrade. The body is nearly devoid of erect setae.

Description. Total length 2.90–10.00 mm. Carapace rather low, red, red brown, or tan, smoothly convex along lateral margins, with at most a few erect setae, without transverse carina on front. Eyes in two transverse recurved rows, with posterior row more recurved than anterior row; lateral eyes larger than median eyes, seated on large conjoined tubercles. Legs I and II red brown with yellow rings, without dorsal macrosetae, with few prolateral macrosetae, with several pairs of ventral macrosetae, and much longer and thicker than legs III and IV; legs III and IV yellow; all legs without scopulae or claw tufts; tarsi with two claws. Abdomen broad, rather flat, creamy white or yellow, with median and paired red longitudinal bands, lacking erect setae. Palpal tibia of male with rather elaborate retrolateral apophysis, and with shorter simpler ventral apophysis. Embolus short, twisted, arising at distal end of tegulum. Epigynum of female somewhat sclerotized, with shallow atrium and small hood. Spermathecae broadly ovoid.

Comments. Members of the genus *Misumena* (Fig. 5) closely resemble those of *Misumenoides*, but lack the white transverse ridge, or carina, found in the latter. There is a world fauna of approximately 60 species, four of which occur in North America. One species is found in Canada.

Misumena vatia (Clerck)

Figs. 1–3, 5, 431–434; Map 30

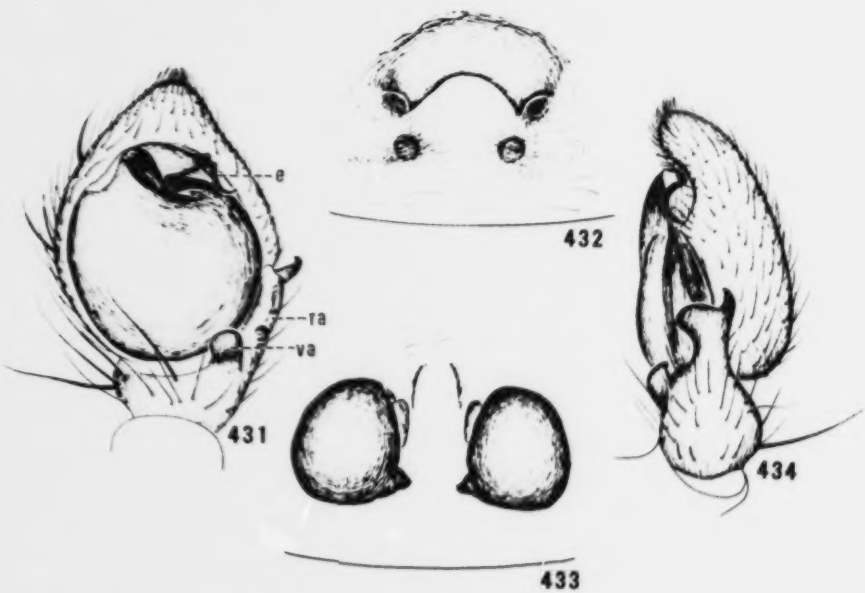
Araneus vatius Clerck, 1757:128.
Aranea calycina Linnaeus, 1758:620.
Aranea kleini Scopoli, 1763:398.
Aranea osbeki Scopoli, 1763:399.
Aranea hasselquisti Scopoli, 1763:399.
Aranea uddmanni Scopoli, 1763:400.
Aranea quadrilineata Linnaeus, 1767:1032.
Aranea scorpiformis Fabricius, 1775:436.
Aranea virginea Müller, 1776:192.
Aranea citrea DeGeer, 1778:298.
Aranea cretata Preyssler, 1791:105.
Aranea dauci Walckenaer, 1802:232.
Thomisus viridis Walckenaer, 1826:84.
Thomisus pratensis Hahn, 1831:43.
Thomisus spinipes Brullé, 1832:53.
Thomisus corona Children, 1836:275.
Thomisus fartus Hentz, 1847:445.
Thomisus devius C.L. Koch, 1845:61.

Thomisus cucurbitinus Sordelli, 1868:476.
Misumena modesta Banks, 1898*a*:262, fig. 1 (pl. 16).
Misumena vatia: Schick 1965:107, figs. 150–152.

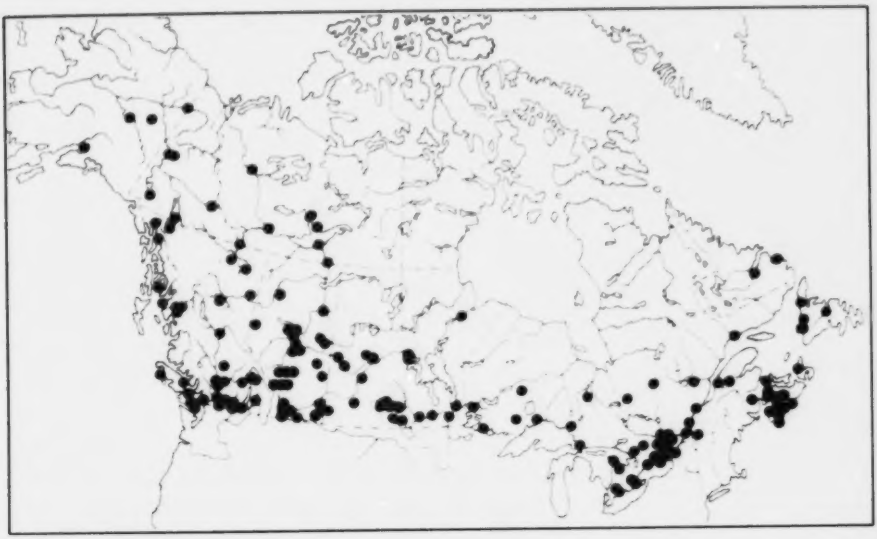
Male. Total length approximately 3.00 mm; carapace 1.43 ± 0.17 mm long, 1.46 ± 0.15 mm wide (15 specimens measured). Carapace red or red brown. Legs I and II red brown with yellow rings; legs III and IV yellow. Dorsum of abdomen creamy white or yellow, with paired red longitudinal bands. Palpal tibia with stout hooked retrolateral apophysis (*ra*), and with shorter truncate ventral apophysis (*va*) (Figs. 431, 434). Embolus (*e*) short, twisted, arising at distal end of tegulum (Fig. 431).

Female. Total length approximately 8.00 mm; carapace 3.03 ± 0.41 mm long, 2.97 ± 0.40 mm wide (15 specimens measured). General shape and color essentially as in male, but much larger and paler; eye tubercles white; legs pale tan; abdomen often with scattered red spots mesad, and with pink or red stripe along sides anteriad. Epigynum somewhat sclerotized, with shallow atrium and small hood (Fig. 432). Spermathecae smooth, broadly ovoid in outline (Fig. 433).

Range. California and Mexico to Florida, northward to Alaska and Newfoundland; Europe, Asia, North Africa.



Figs. 431–434. Genitalia of *Misumena vatia*. 431, Palpus of male, ventral view; 432, Epigynum; 433, Spermathecae; 434, Palpus of male, retrolateral view. *e*, embolus; *ra*, retrolateral apophysis; *va*, ventral apophysis.



Map 30. Collection localities of *Misumena vatia*.

Comments. Specimens of *Misumena vatia* resemble those of *Misumenoides formosipes*, but can be distinguished from the latter by the lack of a white transverse ridge, or carina, on the front. Specimens have been collected commonly on flowers and foliage of many herbs, shrubs, and deciduous trees in pastures, meadows, orchards, and similar places.

Genus *Coriarachne* Thorell

Spiders of the genus *Coriarachne* are crablike, with flattened bodies and long laterigrade legs. The colors are somber and blend in with the tree bark, fence posts, and wooden buildings on which they are found.

Description. Total length 4.50–9.00 mm. Carapace as wide or almost as wide as long, much flattened (as low at level of coxa III as at level of posterior row of eyes), with few erect or semierect slender or clavate setae, mottled dark brown, russet, yellow, and white. Eyes in two transverse recurved rows, with the posterior row more curved than the anterior row; lateral eyes larger than median eyes, seated on large discrete tubercles. Legs light brown, mottled with black, yellow, and white, without scopulae or claw tufts; legs I and II much longer and thicker than legs III and IV; tarsi with two claws. Abdomen flat, low, nearly round in dorsal view, with few filiform or clavate setae, brown or tan, with dark brown and creamy white spots. Palpal tibia of male with well-developed retrolateral and ventral apophyses.

Embolus arising prolaterodistad on tegulum, curving around distal end of tegulum, broad at base and tapering to thin tip, with pars pendula; tegulum nearly round, flat. Epigynum of female with shallow atrium, and with rather broad median septum. Spermathecae approximately kidney-shaped, with surface grooves, often with minute surface pits.

Comments. The mottled greatly flattened carapace, which is as low at the level of coxa II (*cx* II) as at the level of the posterior eye row (Fig. 414), distinguishes members of *Coriarachne* spp. from those of the other genera of Thomisidae. Only six species are known in the world, and they occur in the North Temperate zone of Europe, Asia, and North America. Four species occur in North America (Bowling and Sauer 1975), three of which are represented in Canada.

Key to species of *Coriarachne*

1. Embolus curled at tip (Fig. 435). Median septum of epigynum widening anteriad (Fig. 438) ..... ***brunneipes*** **Banks,** p. 134

   Embolus (*e*) straight at tip (Figs. 439, 443). Median septum (*ms*) narrowing anteriad (Figs. 440, 444) 2

2(1). Embolus with pars pendula (*pp*) extending beyond midline of tegulum (*teg*) (Fig. 439). Copulatory tubes of female not visible, or faintly visible, in dorsal view (Fig. 442) ..... ***utahensis*** **(Gertsch),** p. 136

   Embolus with pars pendula not reaching midline of tegulum (Fig. 443). Copulatory tubes (*ct*) of female visible for their full length in dorsal view (Fig. 446) ..... ***versicolor*** **Keyserling,** p. 139

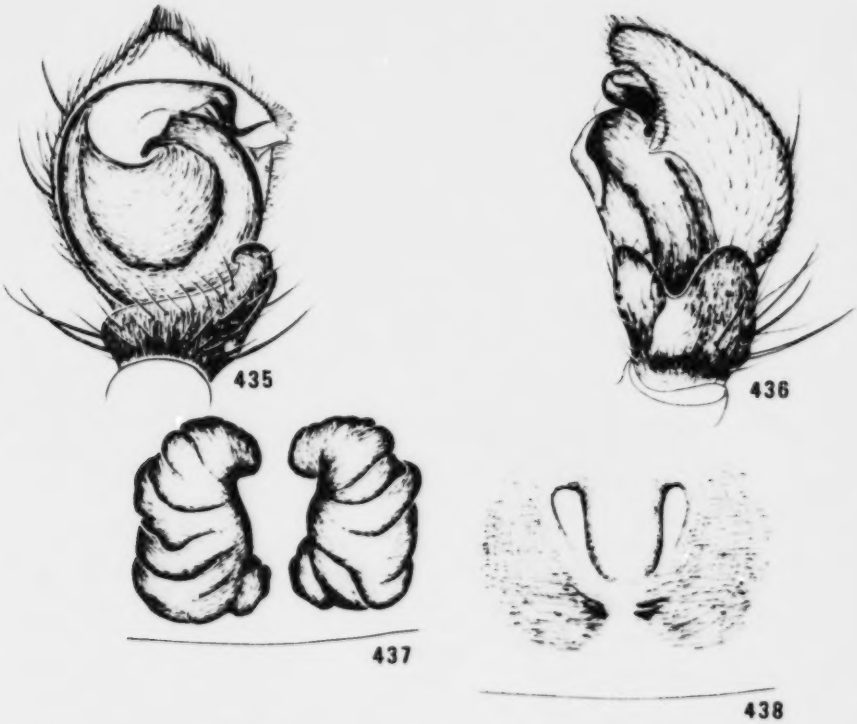
Coriarachne brunneipes Banks

Figs. 435–438; Map 31

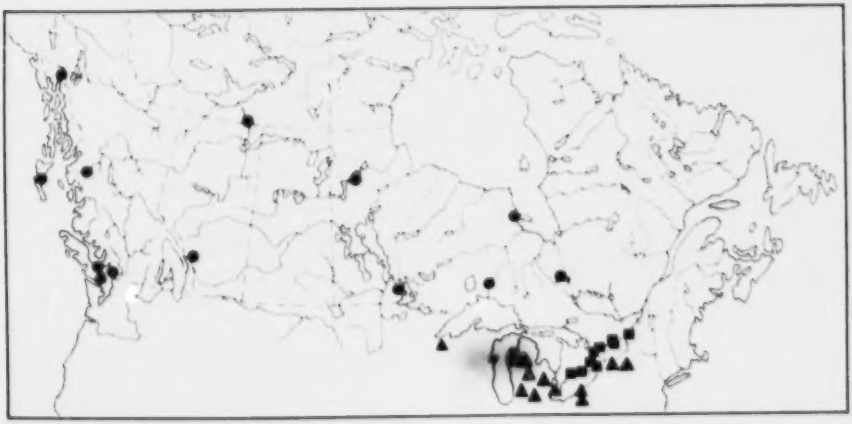
Coriarachne brunneipes Banks, 1893:133; Bowling & Sauer 1975:186, figs. 5, 16, 17.
Coriarachne nakina Gertsch, 1953:462, figs. 69–72.

Male. Total length approximately 5.25 mm; carapace 2.00–3.08 mm long, 1.92–3.00 mm wide (25 specimens measured). Carapace dark red brown, with few dull yellow or off-white spots. Legs dark red brown, mottled or streaked with white and black, lighter distad. Dorsum of abdomen dark brown and tan, with poorly defined white midstripe, and with irregular black, yellow, or white spots. Palpal tibia with well-developed retrolateral and ventral apophyses; retrolateral apophysis with terminal spur reduced or absent (Fig. 436). Embolus short, curled (Fig. 435); tegulum round, flat.

Female. Total length approximately 8.24 mm; carapace 2.32–4.08 mm long, 2.36–4.04 mm wide (25 specimens measured). General shape and color



Figs. 435–438. Genitalia of *Coriarachne brunneipes*. 435, Palpus of male, ventral view; 436, Palpus of male, retrolateral view; 437, Spermathecae; 438, Epigynum.



Map 31. Collection localities of *Coriarachne brunneipes* (●), *C. versicolor* (▲), and *C. versicolor* and *C. utahensis* hybrids (■).

essentially as in male, but somewhat paler. Epigynum with median septum widening anteriad (Fig. 438). Spermathecae grooved, approximately kidney-shaped, separated at middle by approximately one-half their width (Fig. 437).

Range. British Columbia to eastern Ontario, southward to California and Arizona.

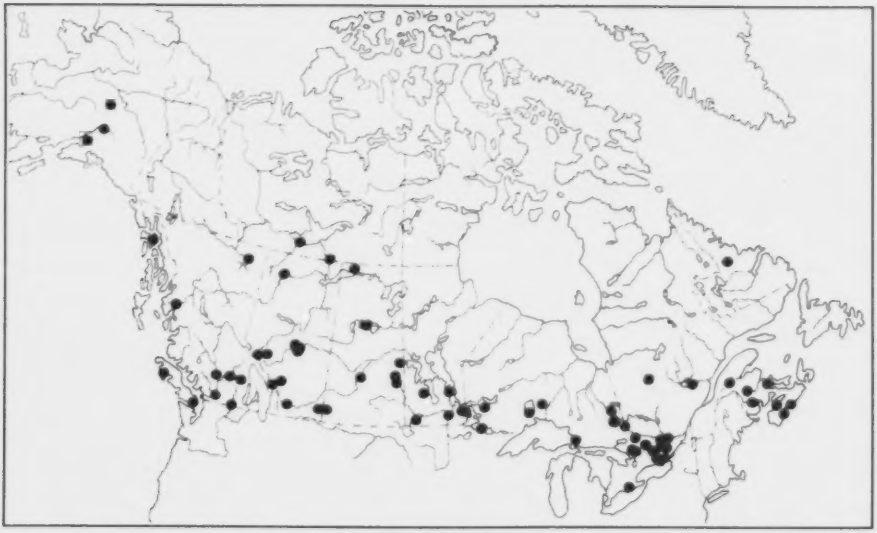
Comments. Males of *C. brunneipes* have a curled, rather than straight, embolus, and females have a median septum that is wider anteriad than posteriad. Both sexes tend to be more flattened and more uniformly pigmented than those of the other species of *Coriarachne*. Specimens have been collected under bark scales.

Coriarachne utahensis (Gertsch)

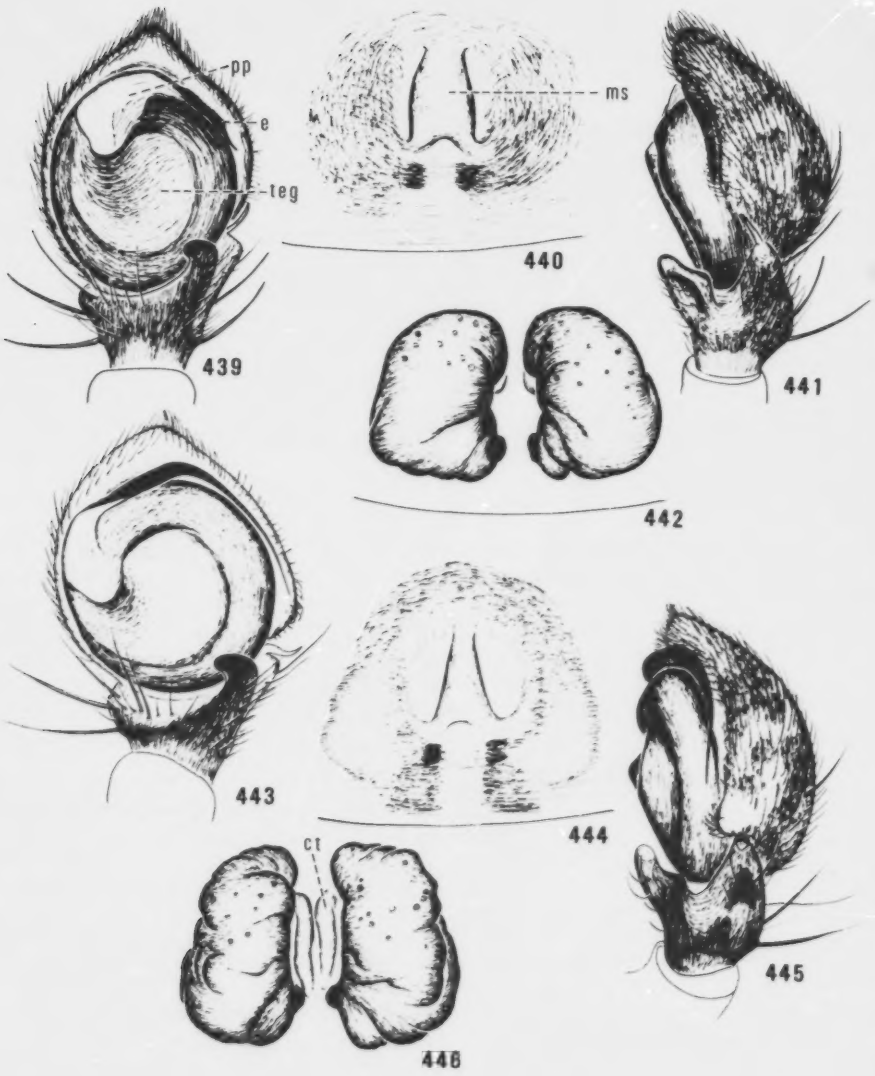
Figs. 414, 439–442; Map 32

Platyxysticus utahensis Gertsch, 1932:5, fig. 2 (in part).
Coriarachne utahensis: Bowling & Sauer 1975:192, figs. 8, 12, 15, 18.

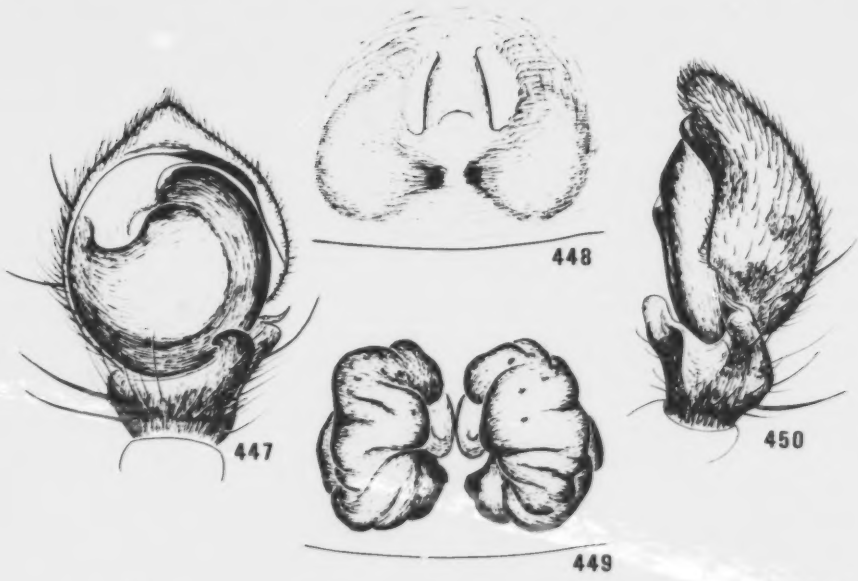
Male. Total length approximately 4.65 mm; carapace 2.12–3.80 mm long, 2.12–3.00 mm wide (25 specimens measured). Carapace brown, mottled with dull yellow and off-white. Legs brown, mottled with dull yellow and off-white. Dorsum of abdomen irregularly spotted with brown, yellow, and white, with the white areas sometimes forming irregular transverse bands.



Map 32. Collection localities of *Coriarachne utahensis*.



Figs. 439–446. Genitalia of *Coriarachne* spp. 439–442, *C. utahensis*. 439, Palpus of male, ventral view; 440, Epigynum; 441, Palpus of male, retrolateral view; 442, Spermathecae. 443–446, *C. versicolor*. 443, Palpus of male, ventral view; 444, Epigynum; 445, Palpus of male, retrolateral view; 446, Spermathecae. *ct*, copulatory tube; *e*, embolus; *ms*, median septum; *pp*, pars pendula; *teg*, tegulum.



Figs. 447–450. Genitalia of *Coriarachne versicolor* and *C. utahensis* hybrids. 447, Palpus of male, ventral view; 448, Epigynum; 449, Spermathecae; 450, Palpus of male, retrolateral view.

Palpal tibia with retrolateral and ventral apophyses; retrolateral apophysis with terminal spur (Fig. 441). Embolus (*e*) rather short, slightly curved, with pars pendula extending beyond midline of tegulum (Fig. 439).

Female. Total length approximately 6.28 mm; carapace 2.12–3.80 mm long, 2.20–3.80 mm wide (25 specimens measured). General structure and color essentially as in male, but somewhat paler and the spots more diffuse. Epigynum with median septum (*ms*) longer than wide; lateral margins converging slightly anteriad (Fig. 440). Spermathecae grooved, approximately kidney-shaped, nearly as wide anteriad as posteriad, close together (Fig. 442); copulatory tubes faintly if at all visible in dorsal view of dissected specimens (Fig. 442).

Range. Alaska to Labrador and Nova Scotia, southward to California, Mexico, and Florida.

Comments. Males can be separated from those of *C. versicolor* by the long pars pendula of the embolus, which extends farther retrolaterad around the distal end of the tegulum. Females can be separated from those of *versicolor* by the short copulatory tubes. *C. utahensis* occupies a much greater range than *versicolor*. In southern Ontario and adjacent United States, specimens are found that are intermediate to those of *utahensis* and *versicolor*

(Figs. 447–450, Map 31). As these intermediates do not form a gradient but always appear halfway between those of the two parental species, and as both intermediates and parents occur together over a large area, the intermediates are interpreted as infertile hybrids. Crossbreeding and backcrossing should be attempted. Specimens of all three forms have been found under bark scales of many kinds of trees.

Coriarachne versicolor Keyserling

Figs. 443–446; Map 31

Coriarachne versicolor Keyserling, 1880:53, fig. 27 (pl. 1); Bowling & Sauer 1975:189, figs. 6, 7, 19–21.

Bassania aemula O. Pickard-Cambridge, 1898:249, figs. 5, 5*a*–5*f* (pl. 31).

Male. Total length approximately 4.72 mm; carapace 2.04–2.96 mm long, 2.20–3.00 mm wide (25 specimens measured). Carapace brown, mottled with dull yellow and off-white. Legs brown, mottled with dull yellow and off-white. Dorsum of abdomen irregularly spotted with brown, yellow, and white, with the white areas sometimes forming transverse bands. Palpal tibia with retrolateral and ventral apophyses; retrolateral apophysis with terminal spur (Fig. 443). Embolus long, thin, slightly curved, with pars pendula not reaching midline of tegulum (Fig. 443).

Female. Total length approximately 5.77 mm; carapace 3.24–3.92 mm long, 2.32–3.24 mm wide (25 specimens measured). General structure and color essentially as in male, but somewhat paler and spots more diffuse. Epigynum with median septum longer than wide, converging anteriad at lateral margins (Fig. 444). Spermathecae grooved, approximately kidney-shaped, close together (Figs. 446); copulatory tubes (*ct*) visible for their full length between spermathecae (Figs. 446).

Range. Utah to the Great Lakes and Massachusetts, southward to Mexico and Florida.

Comments. Males of *C. versicolor* can be distinguished from those of *C. utahensis* by the short pars pendula, which does not reach the midline of the tegulum. Females can be separated from those of *utahensis* by the fully visible copulatory tubes. The range of *versicolor* is more restricted than that of *utahensis*. Intermediates, which are interpreted as infertile hybrids between *versicolor* and *utahensis*, are known from southern Ontario and the adjoining United States, as mentioned under *utahensis*. Specimens of all three forms have been found under bark scales on many kinds of trees.

Genus *Misumenops* F. Pickard-Cambridge

Spiders of the genus *Misumenops* have pale, brightly patterned, flattened bodies and laterigrade legs. Their appearance and locomotion are crablike, and they ambush their prey in the blossoms of herbs, shrubs, and trees as do the members of *Misumenoides* and *Misumena*. The body appears bristly. *Misumenops celer* was the subject of a biological study by Muniappan and Chada (1970).

Description. Total length 1.50–4.00 mm (male) or 4.40–6.70 mm (female). Carapace rather low, smoothly convex along lateral margins, approximately as broad as long, with many simple erect setae; yellow with red or brown pattern. Eyes in two transverse recurved rows, with the posterior row more curved than the anterior row; lateral eyes larger than median eyes, seated on large conjoined tubercles. Legs yellow or off-white, sometimes ringed with red or brown, without scopulae or claw tufts; legs I and II approximately equal in length and thickness, both longer and thicker than III and IV, which are also approximately equal; femur I with erect prolateral macrosetae; tarsi with two claws. Abdomen approximately round in dorsal view, rather flattened, usually with many erect simple setae, and usually pale with red marks. Palpal tibia of male with strong pointed rather elaborate retrolateral apophysis, and with short tuberclelike ventral apophysis. Embolus slender, arising on prolateral or distal margin of tegulum, often forming terminal spiral; tegulum rather flat, round, without apophyses. Epigynum of female usually with shallow atrium, with narrow median septum, and with small hood. Copulatory tubes with soft enlarged part and hard coiled part; spermathecae approximately rectangular in outline, usually with small finger-like spermathecal organs.

Comments. Members of the genus *Misumenops* resemble those of *Misumenoides* and *Misumena* in shape and color, but differ by having many erect setae on body and legs (Figs. 413, 415). The terminal spiral of the male embolus (*e*) of most species of *Misumenops* (Fig. 456) and the two-part copulatory tube (*ct*) in females (Fig. 458) are also diagnostic.

The genus *Misumenops* comprises a world fauna of about 60 species, which are heavily concentrated in the warmer countries of the western hemisphere. Twenty-seven species have been described for North America, five of which occur in Canada. The genus needs revising.

Key to species of *Misumenops*

1. Male 2

   Female 6

2(1). Embolus (*e*) with terminal loop (Fig. 456) 3

   Embolus (*e*) without terminal loop (Fig. 452) ..... ***oblongus*** **(Keyserling),** p. 141

3(2). Pars pendula (*pp*) of embolus extending nearly to tip; retrolateral apophysis (*ra*) of palpal tibia bent at tip (Fig. 456) ..... ***asperatus* (Hentz),** p. 144

Pars pendula of embolus not extending nearly to tip (Figs. 462, 470); retrolateral apophysis of palpal tibia pointed 4

4(3). Length of palpal tibia including retrolateral apophysis greater than distance from tip of apophysis to tip of cymbium (Fig. 462) ..... ***sierrensis* Schick,** p. 145

Length of palpal tibia including retrolateral apophysis equal to or less than distance from tip of retrolateral apophysis to tip of cymbium (Figs. 465, 470) 5

5(4). Embolus broad and ribbonlike in prolateral view (Fig. 464); retrolateral apophysis of palpal tibia angulate on ventral margin (Fig. 465) ..... ***carletonicus* Dondale & Redner,** p. 146

Embolus slender; retrolateral apophysis not angulate (Fig. 470) ..... ***celer* (Hentz),** p. 147

6(1). Median septum (*ms*) of epigynum broad, tonguelike (Fig. 453). Dorsum of abdomen usually without color pattern ..... ***oblongus* (Keyserling),** p. 141

Median septum of epigynum more slender (Figs. 455, 469). Dorsum of abdomen with color pattern 7

7(6). Soft anterior parts of copulatory tubes (*ct*) extending far anteriad of hard parts (Figs. 458, 466) 8

Soft anterior parts of copulatory tubes (*ct*) not extending far anteriad of hard parts (Figs. 461, 471) 9

8(7). Soft anterior parts of copulatory tubes folded upon themselves (Fig. 466) ..... ***carletonicus* Dondale & Redner,** p. 146

Soft anterior parts of copulatory tubes (*ct*) not folded (Fig. 458) ..... ***asperatus* (Hentz),** p. 144

9(7). Soft anterior parts of copulatory tubes extending anteriad as far as hard parts (Figs. 471, 472) ..... ***celer* (Hentz),** p. 147

Soft anterior parts of copulatory tubes (*ct*) not extending anteriad as far as hard parts (Fig. 461) ..... ***sierrensis* Schick,** p. 145

Misumenops oblongus (Keyserling)

Figs. 451–454; Map 33

Misumena oblonga Keyserling, 1880:79, fig. 41 (pl. 2).
Misumena americana Keyserling, 1880:85, fig. 44 (pl. 2).
Misumenops oblongus: Gertsch 1939:319, figs. 44, 45, 62, 63.

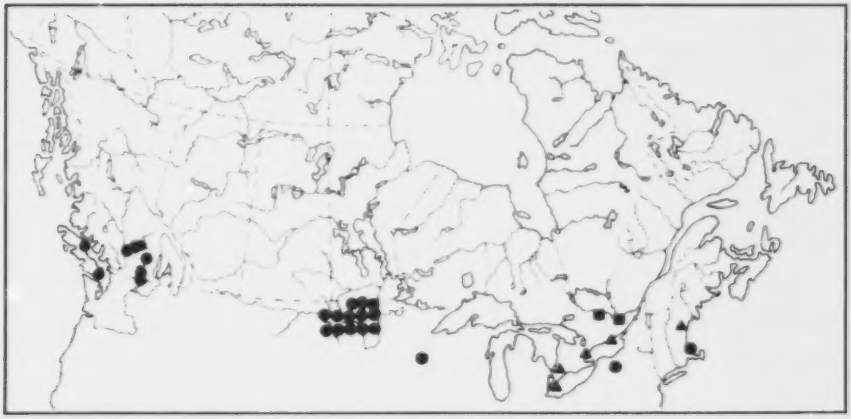
Male. Total length approximately 2.60 mm; carapace 1.15 ± 0.07 mm long, 1.18 ± 0.07 mm wide (13 specimens measured). Carapace pale green

to dull yellow or red, without spots or longitudinal bands, and with several stout erect setae. Legs yellow, each segment usually with red ring at distal end. Dorsum of abdomen yellow to off-white, without spots or bands, and with sparse covering of short erect setae. Palpal tibia with rather short dorsally bent retrolateral apophysis (Fig. 452), and with short fingerlike ventral apophysis (Fig. 451). Embolus (*e*) arising smoothly near distal end of tegulum, curved around retrolateral margin of tegulum, terminating near retrolateral apophysis, without terminal spiral (Figs. 451, 452).

Female. Total length approximately 6.16 mm; carapace 2.14 ± 0.30 mm long, 2.15 ± 0.29 mm wide (17 specimens measured). General structure and color essentially as in male, but body larger; legs longer, without red rings; carapace nearly devoid of erect setae; abdomen sometimes with red marks at lateral margins. Epigynum with shallow atrium, and with prominent broad tonguelike median septum (*ms*) (Fig. 453). Copulatory tubes long, slender; spermathecae saclike (Fig. 454).

Range. California, Mexico, and Florida, northward to southern Ontario and Massachusetts.

Comments. The pale body, which usually lacks color spots or bands and is nearly devoid or erect setae, the embolus of the male, which lacks a

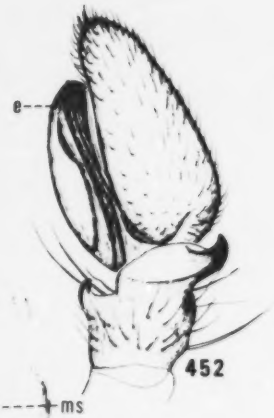


Map 33. Collection localities of *Misumenops oblongus* (▲), *M. carletonicus* (■), and *M. celer* (●).

Figs. 451–458. Genitalia of *Misumenops* spp. 451–454, *M. oblongus*. 451, Palpus of male, ventral view; 452, Palpus of male, retrolateral view; 453, Epigynum; 454, Spermathecae. 455–458, *M. asperatus*. 455, Epigynum; 456, Palpus of male, retrolateral view; 457, Palpus of male, ventral view; 458, Spermathecae. *ct*, copulatory tube; *e*, embolus; *ms*, median septum; *pp*, pars pendula; *ra*, retrolateral apophysis; *spt*, spermatheca.

terminal spiral, and the broad tonguelike median septum of the female distinguish specimens of *M. oblongus* from those of the other species. Specimens have been collected from the foliage and blossoms of many plants.

451



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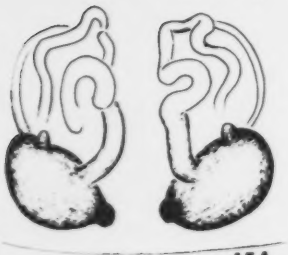
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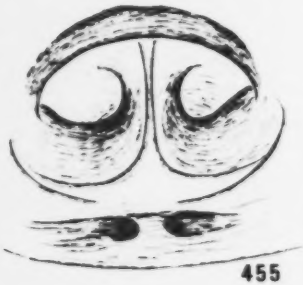
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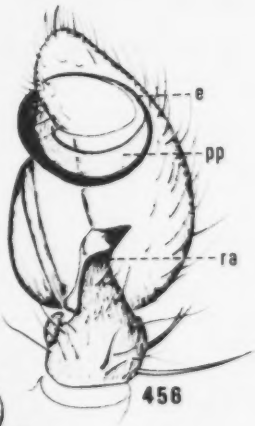

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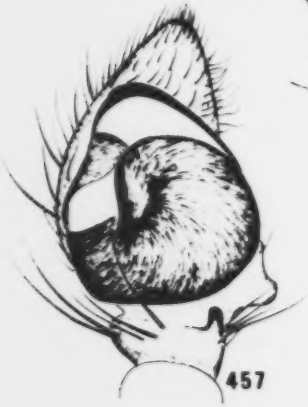
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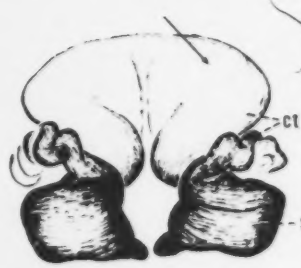


458

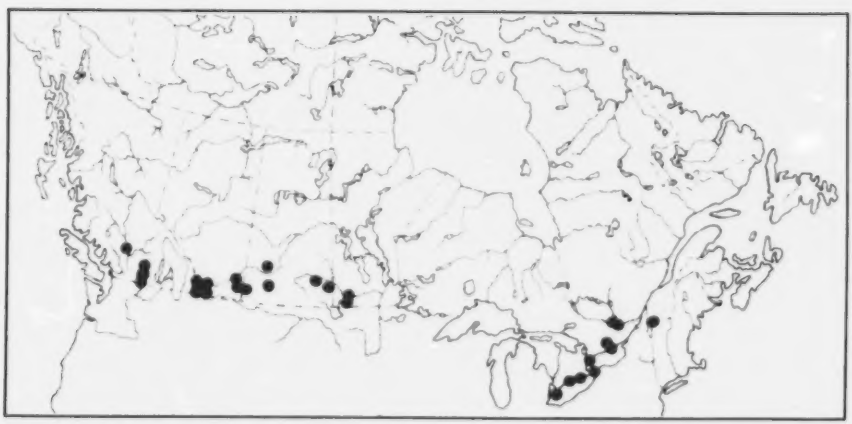
Misumenops asperatus (Hentz)

Figs. 413, 415, 455–458; Map 34

Thomisus asperatus Hentz, 1847:447, fig. 7 (pl. 23).
Misumena rosea Keyserling, 1880:82, fig. 43 (pl. 2).
Misumena foliata Banks, 1892:57, fig. 17 (pl. 3), fig. 37 (pl. 2).
Misumena placida Banks, 1892:58.
Misumenops asperatus utus Gertsch, 1933*b*:15, fig. 14.
Misumenops asperatus: Gertsch 1939:328, figs. 34, 35, 56, 57, 69, 72, 73.

Male. Total length approximately 3.30 mm; carapace 1.41 ± 0.11 mm long, 1.50 ± 0.11 mm wide (15 specimens measured). Carapace dull yellow to off-white, with pair of red or brown longitudinal bands, and with numerous simple erect setae. Legs dull yellow to off-white, the femora spotted with red and all segments with distal red ring; femur I with dorsal and prolateral erect macrosetae. Dorsum of abdomen off-white, with two pairs of longitudinal red bands or rows of spots, sometimes with lateral red band anteriad, and with numerous erect setae. Palpal tibia with long erect pointed retrolateral apophysis (*ra*) (Fig. 456), and with small fingerlike ventral apophysis (Fig. 457). Embolus arising broadly prolaterodistad on tegulum, arched around distal end of tegulum, forming terminal spiral on retrolateral side of cymbium; pars pendula extending nearly to tip of embolus (Figs. 456, 457).

Female. Total length approximately 5.50 mm; carapace 2.12 ± 0.16 mm long, 2.16 ± 0.16 mm wide (15 specimens measured). General structure and color essentially as in male, but body larger; legs longer, unringed; bands on carapace and abdomen faint. Epigynum with large atrium, with long slender median septum, and with large sclerites surrounding copulatory openings (Fig. 455). Soft part of copulatory tubes (*ct*) extending anteriad of spermathecae (*spt*) (Fig. 458).



Map 34. Collection localities of *Misumenops asperatus*.

Range. New Mexico to Florida, northward to British Columbia, Quebec, and Massachusetts.

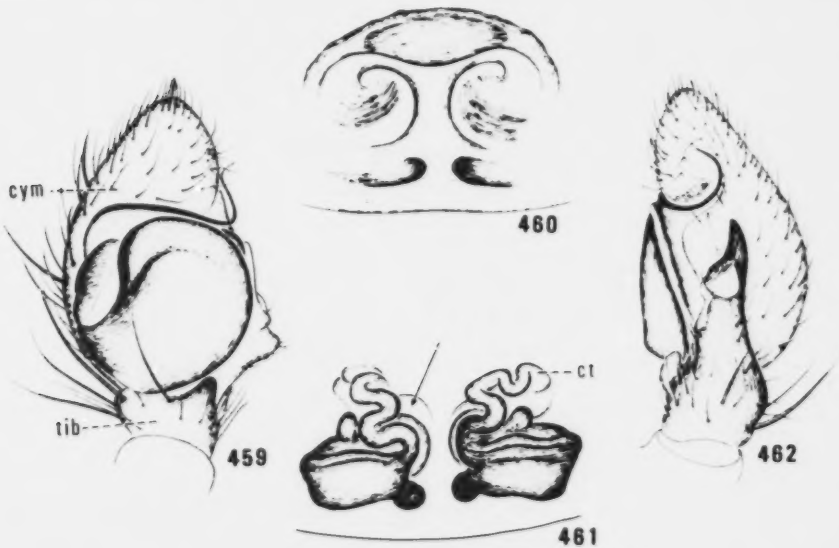
Comments. The broad embolus, with its complete terminal loop and extended pars pendula in the male, and the long unfolded soft part of the copulatory tube of the female distinguish specimens of *M. asperatus* from those of the other species. Specimens have been collected from foliage and blossoms of many kinds of plants.

Misumenops sierrensis Schick

Figs. 459–462; Map 35

Misumenops sierrensis Schick, 1965:119.

Male. Total length approximately 3.00 mm; carapace 1.35–1.50 mm long, 1.43–1.60 mm wide (nine specimens measured). Carapace yellow to off-white, with pair of brown gray longitudinal lateral bands, and with numerous simple erect setae. Legs yellow to off-white, usually with red rings at distal ends of tibiae, basitarsi, and distitarsi. Dorsum of abdomen off-white, sometimes with paired red spots, and with numerous simple erect setae. Palpal



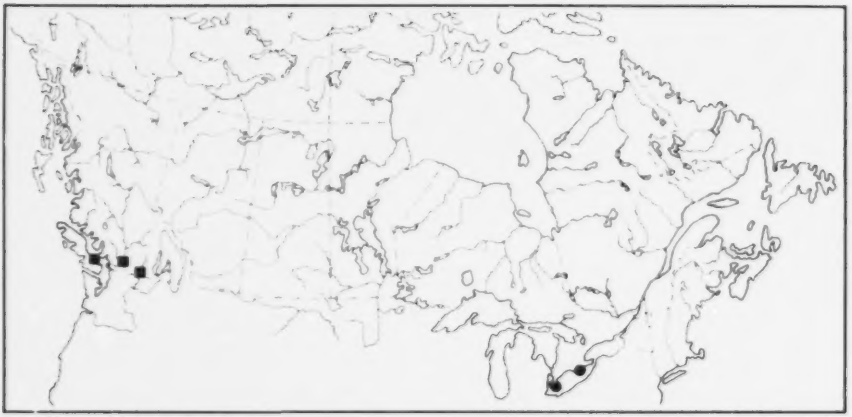
Figs. 459–462. Genitalia of *Misumenops sierrensis*. 459, Palpus of male, ventral view; 460, Epigynum; 461, Spermathecae; 462, Palpus of male, retrolateral view. *ct*, copulatory tube; *cym*, cymbium; *tib*, tibia.

tibia with long retrolateral apophysis, and with short ventral apophysis; length of tibia (*tib*) including retrolateral apophysis greater than distance from tip of retrolateral apophysis to tip of cymbium (*cym*) (Figs. 459, 462). Embolus arising simply on tegular margin, forming terminal spiral, with pars pendula extending slightly beyond base of embolus (Figs. 459, 462).

Female. Total length approximately 5.00 mm; carapace 1.99 ± 0.10 mm long, 2.04 ± 0.12 mm wide (12 specimens measured). General structure and color essentially as in male, but body larger; legs longer, unringed; colored areas of carapace and abdomen faint. Epigynum with large atrium, and with long slender median septum (Fig. 460). Soft anterior part of copulatory tubes (*ct*) short, sometimes not visible; spermathecae broader than long (Fig. 461).

Range. California to British Columbia.

Comments. The long male palpal tibia including retrolateral apophysis, relative to the length of the cymbium between its tip and the tip of the retrolateral apophysis, and the shortness of the soft part of the female copulatory tube, distinguish specimens of *M. sierrensis* from those of the other species. Specimens have been swept from roadside shrubs.



Map 35. Collection localities of *Misumenoides formosipes* (●) and *Misumenops sierrensis* (■).

Misumenops carletonicus Dondale & Redner

Figs. 463–467; Map 33

Misumenops carletonicus Dondale & Redner, 1976*b*:1007, figs. 1–5.

Male. Total length approximately 3.20 mm; carapace 1.24–1.74 mm long, 1.32–1.83 mm wide (five specimens measured). Carapace orange to

orange yellow, with pair of indistinct gray green lateral bands, and with numerous erect black setae. Legs orange brown, with broad red ring near distal end of tibiae and basitarsi; femur I with about ten dark erect macrosetae on prolateral surface. Dorsum of abdomen with median row of paired orange spots on posterior two-thirds, and with numerous erect setae. Palpal tibia with long retrolateral apophysis that is angular on ventral margin, and with short tuberclelike ventral apophysis (Figs. 463, 465). Embolus broad, ribbonlike (Fig. 464), with terminal spiral exceeding in diameter one-half length of tegulum (Fig. 465).

Female. Total length approximately 4.36 mm; carapace approximately 2.08 mm long, 2.06 mm wide (one specimen measured). General structure and color essentially as in male, but size greater and legs longer. Epigynum with deep atrium, and with long median septum that is expanded in posterior half and has a mesal ridge (Fig. 467). Copulatory tubes each with stout folded anterior part lying anteriad of spermathecae, and with harder undulating part; spermathecae approximately rectangular in outline (Fig. 466).

Range. Ontario and northern New York State.

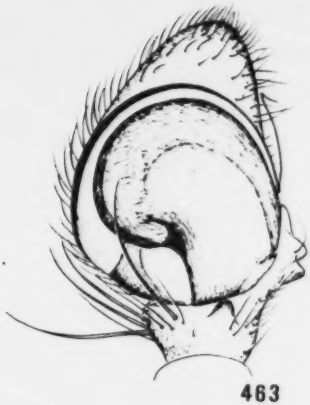
Comments. The ribbonlike embolus with a broad terminal spiral in the male and the large folded soft anterior part of the copulatory tube of the female distinguish specimens of *M. carletonicus* from those of the other species of *Misumenops*. Specimens have been collected from blossoms in wooded areas.

Misumenops celer (Hentz)

Figs. 468–472; Map 33

Thomisus celer Hentz, 1847:446, fig. 5 (pl. 23).
Diaea lepida Thorell, 1877:498.
Misumena spinosa Keyserling, 1880:81, fig. 42 (pl. 2).
Misumena georgiana Keyserling, 1880:86, fig. 45 (pl. 2).
Misumena alabamensis Keyserling, 1884*a*:666, fig. 15 (pl. 21).
Misumena diegoi Keyserling, 1887:481, fig. 41 (pl. 6).
Misumenops celer: Gertsch 1939:322, figs. 30, 31, 50, 51, 68.

Male. Total length approximately 3.00 mm; carapace 1.23 ± 0.10 mm long, 1.32 ± 0.15 mm wide (15 specimens measured). Carapace dull yellow to off-white, with pair of gray brown lateral bands, and with rows of stiff erect setae. Legs dull yellow to off-white, usually with red ring at distal end of each segment; femur I with several stout erect dorsal and prolateral setae. Dorsum of abdomen yellow to gray, with pair of red longitudinal bands or rows of spots on posterior half, and with rows of stout erect setae. Palpal tibia with broad pointed nearly straight retrolateral apophysis that has a convex ventral margin, and with small tuberclelike ventral apophysis (Figs. 468, 470). Embolus slender, arising simply on prolaterobasal margin of tegulum, arching around distal end of tegulum, forming small terminal spiral on retrolateral side of cymbium (Figs. 468, 470).



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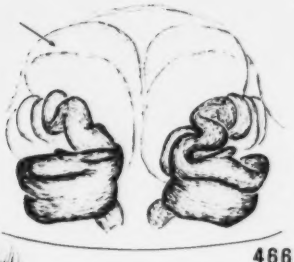

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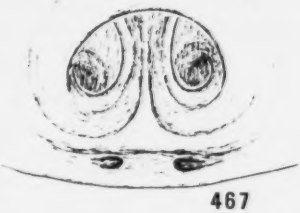

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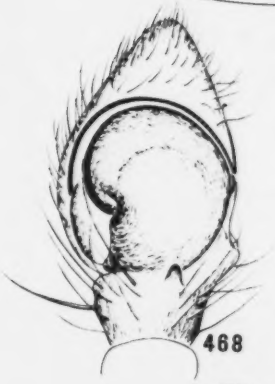

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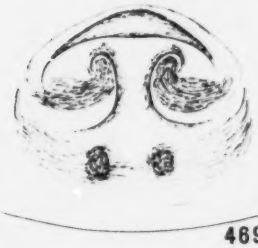

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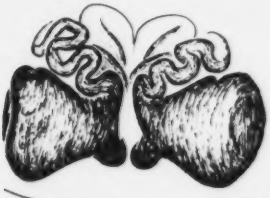

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Female. Total length approximately 5.50 mm; carapace 2.05 ± 0.36 mm long, 2.05 ± 0.35 mm wide (15 specimens measured). General structure and color essentially as in male, but size greater; legs longer, unringed; carapace and dorsum of abdomen often without bands. Epigynum with deep atrium, and long slender median septum that lacks mesal ridge (Fig. 469). Copulatory tubes each with short soft anterior part, and with slender, hard part (Figs. 471, 472); spermathecae approximately rectangular, with small fingerlike spermathecal organ (Figs. 471, 472).

Range. California, Mexico, and Central America to Florida and the West Indies, northward to British Columbia and Massachusetts.

Comments. The slender embolus with small terminal spiral and the nearly straight ventral margin of the retrolateral apophysis distinguish males of *M. celer* from those of *M. carletonicus*. The shortness of the soft anterior part of the copulatory tube distinguishes females of *celer* from those of other species. Specimens of *celer* have been collected from blossoms and foliage of many kinds of plants.

Figs. 463–472. Genitalia of *Misumenops* spp. 463–467, *M. carletonicus*. 463, Palpus of male, ventral view; 464, Palpus of male, prolateral view; 465, Palpus of male, retrolateral view; 466, Spermathecae; 467, Epigynum. 468–472, *M. celer*. 468, Palpus of male, ventral view; 469, Epigynum; 470, Palpus of male, retrolateral view; 471 and 472, Spermathecae.

Genus *Ozyptila* Simon

Spiders of the genus *Ozyptila* are somber-colored inhabitants of plant litter, crevices beneath stones, and surface soil. The body is rotund and flattened, and the legs are rather short, stout, and laterigrade. These spiders have been said to resemble diminutive toads.

Description. Total length 3.00–4.00 mm. Carapace red brown, orange, or nearly black, with many clavate setae, in dorsal view smoothly convex along lateral margins and abruptly narrowed at level of posterior row of eyes, in lateral view highest at level of dorsal groove (approximately 1.5 times as high at this level as at level of posterior row of eyes). Eyes in two transverse rows, with the lateral eyes on large conjoined tubercles; distance from anterior lateral eye to posterior lateral eye on one side equal to, or slightly less than, distance from anterior median eye to posterior median eye. Legs rather short, stout, colored like carapace, without scopulae or claw tufts, with legs I and II longer and stouter than legs III and IV, and usually with femur I distinctly swollen on prolateral side; tibia I with one short dorsal clavate macroseta, and with two pairs of nonclavate ventral macrosetae (neither pair terminal); distitarsus I with two or three (rarely four) middorsal trichobothria in distal half; tarsi with two claws. Abdomen rotund, flattened, often transversely wrinkled, covered dorsally with curved rows of short clavate setae.

Palpal tibia of male with retrolateral, ventral, and sometimes intermediate apophyses. Embolus short, usually arising simply on distal or prolaterodistal margin of tegulum, usually appressed to margin of cymbium; tegulum rather flat, nearly circular, usually with hard apophysis at or near its center. Epigynum of female usually with hood and shallow atrium, and with transversely wrinkled area posterior to hood; copulatory openings located laterad in atrium. Spermathecae usually in two parts with the posterior part bulbous, but occasionally without divisions.

Comments. Representatives of the genus *Ozyptila* mainly resemble specimens of *Coriarachne* spp. and *Xysticus* spp. Specimens of *Ozyptila* spp., however, differ from those of *Coriarachne* spp. by having a carapace that is distinctly higher at the level of coxa II than at the level of the posterior row of eyes, and usually less than four middorsal trichobothria on basitarsus I. Specimens of *Ozyptila* spp. can be distinguished from those of *Xysticus* by the clavate body setae on the abdominal dorsum and the swollen femur and sparsely armed leg I (Fig. 422). Representatives of a few species of *Xysticus* have clavate setae, but these lack the modifications in leg I, and the females lack an epigynal hood.

Approximately 80 species of *Ozyptila* have been described for the world, 22 of which inhabit North America (Dondale & Redner 1975*c*). Twelve species occur in Canada.

Key to species and subspecies of *Ozyptila*

1. Ventral apophysis of male palpal tibia arising mesad or retrolaterad on segment (Figs. 478, 488). Epigynum of female with hood (*h*) (Figs. 480, 484) 2

   Ventral apophysis (*va*) of male palpal tibia arising prolaterad on segment (Fig. 473). Epigynum of female without hood (Figs. 475, 476) ..... ***septentrionalium*** **L. Koch,** p. 152

2(1). Male 3

   Female 13

3(2). Retrolateral apophysis of palpal tibia bent ventrad at angle of approximately 90° near base (Fig. 479). Lateral areas of carapace with yellow radiating lines ..... ***praticola*** **(C.L. Koch),** p. 155

   Retrolateral apophysis of palpal tibia not bent ventrad at angle of approximately 90° near base. Lateral areas of carapace without yellow radiating lines 4

4(3). Retrolateral apophysis of palpal tibia extending beyond midlength of cymbium (Figs. 482, 488) 5

   Retrolateral apophysis of palpal tibia not extending beyond midlength of cymbium 6

5(4). Embolus (*e*) curled, hanging free from tegulum (Fig. 482) ..... ***georgiana*** **Keyserling,** p. 155

Embolus not curled, lying against tegulum (Fig. 488) ..... ***gertschi*** **Kurata,** p. 157

6(4). Basal tegular ridge (*btr*) of palpus without teeth (Figs. 493, 498, 505) 7

Basal tegular ridge of palpus with one or more teeth (Figs. 508, 517) 9

7(6). Tooth at base of basal tegular ridge divided (Fig. 493) ..... ***conspurcata*** **Thorell,** p. 160

Tooth at base of basal tegular ridge not divided (Figs. 498, 505) 8

8(7). Basal tegular ridge with smooth basal margin (Fig. 498); retrolateral apophysis set at angle with long axis of palpus (Fig. 500) ..... ***monroensis*** **Keyserling,** p. 160

Basal tegular ridge with undulating basal margin (Fig. 505); retrolateral apophysis parallel to long axis of palpus (Fig. 507) ..... ***sincera canadensis*** **Dondale & Redner,** p. 163

9(6). Basal tegular ridge of palpus with one tooth (Figs. 508, 512, 517) 10

Basal tegular ridge of palpus with two teeth (Figs. 525, 529) 12

10(9). Retrolateral apophysis of palpal tibia in ventral view essentially parallel with long axis of tibia (Figs. 512, 517) 11

Retrolateral apophysis (*ra*) of palpal tibia in ventral view not parallel with long axis of tibia, bent retrolaterad (Fig. 508) ..... ***americana*** **Banks,** p. 164

11(10). Prolaterobasal margin of tegulum with broad sclerotized area (Fig. 512) ..... ***distans*** **Dondale & Redner,** p. 166

Prolaterobasal margin of tegulum without broad sclerotized area (Fig. 517) ..... ***beaufortensis*** **Strand,** p. 166

12(9). Teeth on basal tegular ridge distinctly separated (Fig. 525) ..... ***pacifica*** **Banks,** p. 169

Teeth on basal tegular ridge close together (Figs. 529, 531) ..... ***curvata*** **Dondale & Redner,** p. 170

13(2). Epigynum wrinkled (Figs. 484, 490) 14

Epigynum not wrinkled (Fig. 480). Carapace with yellow radiating lines ..... ***praticola*** **(C.L. Koch),** p. 155

14(13). Epigynum with large pale Y posterior to hood (Fig. 495); anterior part of each spermatheca extending anterolaterad (Figs. 496, 497) ..... ***conspurcata*** **Thorell,** p. 160

Epigynum without large pale Y; anterior part of each spermatheca not extending anterolaterad 15

15(14). Epigynum with fewer than six wrinkles 16

Epigynum with more than six wrinkles (Figs. 484, 486) ..... ***georgiana*** **Keyserling,** p. 155

16(15). Epigynum with W-shaped plate posterior to hood (Fig. 510) ..... ***americana*** **Banks,** p. 164

Epigynum without W-shaped plate 17

17(16). Epigynum with paired rounded sclerites at level of hood (Figs. 499, 503) 18

Epigynum without paired rounded sclerites at level of hood 19

18(17). Epigynum with deep V-shaped groove posterior to hood (Fig. 499); anterior part of each spermatheca less than one-third as long as posterior part (Figs. 501, 502) ..... ***monroensis*** **Keyserling,** p. 160

Epigynum without deep V-shaped groove (Fig. 503); anterior part of each spermatheca more than one-third as long as posterior part (Figs. 504, 506) ..... ***sincera canadensis*** **Dondale & Redner,** p. 163

19(17). Epigynum with broad U-shaped sclerite, and with copulatory openings (*co*) located beneath its mesal margins (Figs. 519, 532) 20

Epigynum without U-shaped sclerite, and with copulatory openings located laterad (Fig. 528) ..... ***pacifica*** **Banks,** p. 169

20(19). Anterior part of each spermatheca approximately as long as posterior part, approximately uniform in width (Figs. 491, 492) ..... ***gertschi*** **Kurata,** p. 157

Anterior part of each spermatheca not as long as posterior part, not uniform in width (Figs. 514, 520) 21

21(20). U-shaped sclerite of epigynum slender (Fig. 516) ..... ***distans*** **Dondale & Redner,** p. 166

U-shaped sclerite of epigynum not slender 22

22(21). Wrinkles of epigynum undulating (Figs. 519, 522) ..... ***beaufortensis*** **Strand,** p. 166

Wrinkles of epigynum not undulating, though ends may bend posteriad (Figs. 532–534) ..... ***curvata*** **Dondale & Redner,** p. 170

Ozyptila septentrionalium L. Koch

Figs. 473–477; Map 36

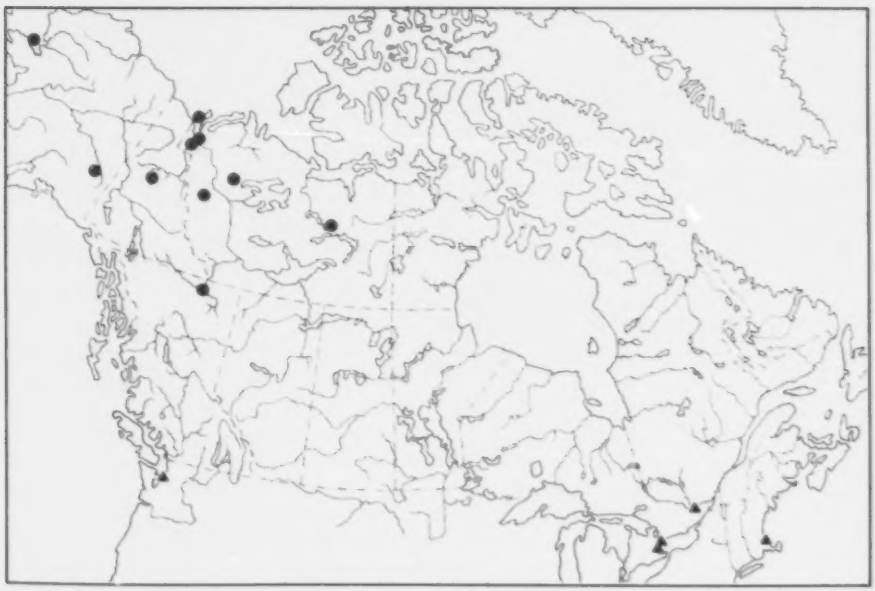
Oxyptila septentrionalium L. Koch, 1879:96, figs. 11, 11*a* (pl. 3).
Ozyptila septentrionalium: Dondale & Redner 1975*c*:163, figs. 35, 38, 103–105.

Male. Total length approximately 3.00 mm; carapace 1.24–1.69 mm wide (six specimens measured). Carapace dark red brown to nearly black, with yellow eye area, with divided yellow V-shaped mark at dorsal groove,

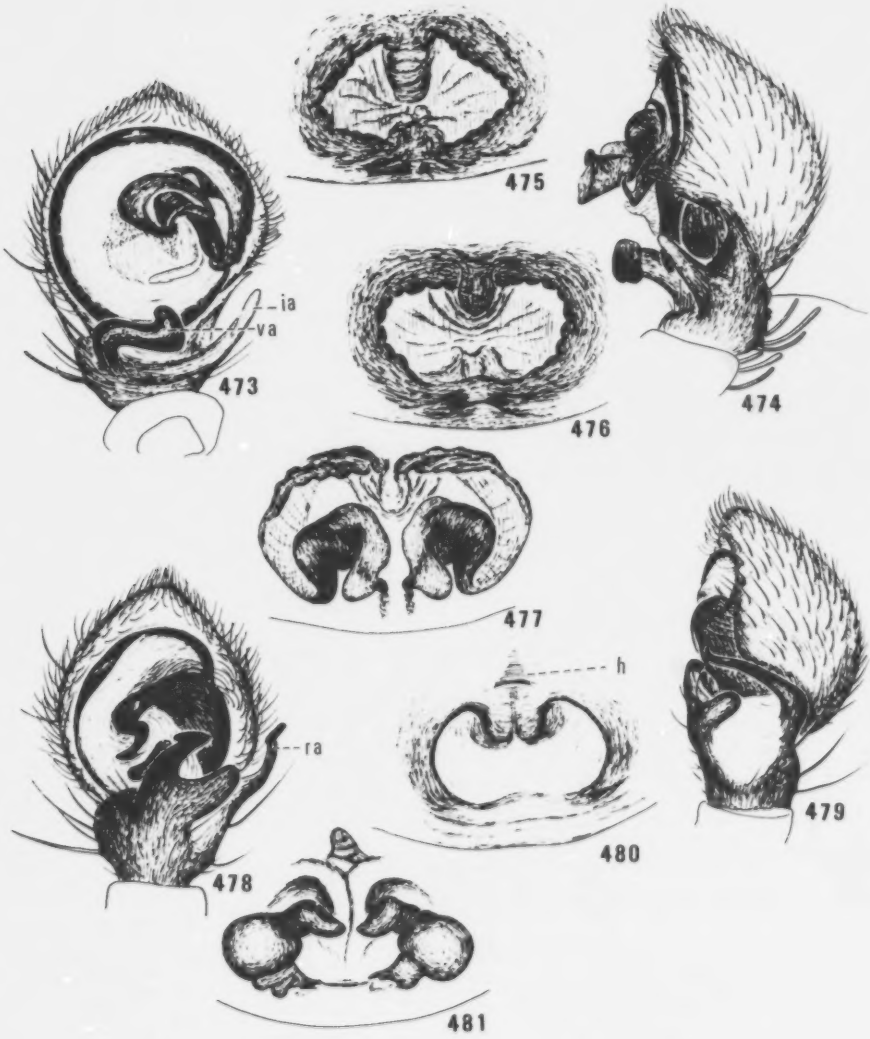
and with clavate setae; lateral areas divided by longitudinal band of yellow spots. Legs red brown or yellow brown; femora darkest, with indistinct brown or yellow spots; femur I swollen prolaterad; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen red or yellow, with small off-white paired spots, and with rows of short clavate setae. Palpal tibia with retrolateral apophysis lying close to cymbium, with slender curved intermediate apophysis (*ia*), and with transverse hooked ventral apophysis (*va*) (Figs. 473, 474). Embolus rather broad, terminating in slender angled piece (Figs. 473, 474); tegulum with stout fluted apophysis near center (Fig. 473).

Female. Total length approximately 3.00 mm; carapace 1.21–1.55 mm wide (10 specimens measured). General structure and color essentially as in male, but legs yellow or red brown, with femora and tibiae streaked and spotted with brown to black. Epigynum lacking hood, with distinct depressed atrium, and with median septum (Figs. 475, 476). Spermathecae looped (Fig. 477).

Range. Alaska to western Northwest Territories and northern British Columbia; Europe and Siberia.



Map 36 Collection localities of *Ozyptila septentrionalium* (●) and *O. praticola* (▲).



Figs. 473–481. Genitalia of *Ozyptila* spp. 473–477, *O. septentrionalium*. 473, Palpus of male, ventral view; 474, Palpus of male, retrolateral view; 475 and 476, Epigynum; 477, Spermathecae. 478–481, *O. praticola*. 478, Palpus of male, ventral view; 479, Palpus of male, retrolateral view; 480, Epigynum; 481, Spermathecae. *h*, hood; *ia*, intermediate apophysis; *ra*, retrolateral apophysis; *va*, ventral apophysis.

Comments. Specimens of *O. septentrionalium* are distinguished from those of other species of *Ozyptila* by the transverse ventral apophysis on the palpal tibia of the male and the presence of a hood in the epigynum of the female. Adults have been collected from shrub tundra in pitfall traps.

Ozyptila praticola (C.L. Koch)

Figs. 478–481; Map 36

Xysticus praticola C.L. Koch, 1837:26.
Ozyptila praticola: Dondale & Redner 1975c:144, figs. 9, 12, 53, 54.

Male. Total length approximately 3.00 mm; carapace 1.35–1.60 mm wide (eight specimens measured). Carapace dark red brown, with yellow eye area, median band, and radiating lines, with yellow V at dorsal groove, and with clavate setae. Legs red brown; femora spotted with yellow or black; tibiae III and IV dark at base; femur I swollen prolaterad; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen red brown, with off-white or black spots and transverse streaks, and with clavate setae. Palpal tibia with slightly sinuous slender bent retrolateral apophysis (*ra*), with blunt intermediate apophysis, and with hooked ventral apophysis (Figs. 478, 479). Embolus ribbonlike (Fig. 478); tegulum with thin ridgelike tooth near center, and with broad flat basal tegular ridge without teeth (Fig. 478).

Female. Total length approximately 4.00 mm; carapace 1.55–1.75 mm wide (eight specimens measured). General structure and color essentially as in male, but paler. Epigynum with shallow smooth atrium, with distinct rim, and with small hood (Fig. 480). Spermathecae inclined toward midline at anterior end (Fig. 481).

Range. Southern Ontario, coastal northwestern and northeastern United States; Europe.

Comments. The yellow radiating lines on the carapace, the strongly bent retrolateral apophysis on the male tibia, and the unwrinkled epigynum distinguish adults of *O. praticola* from those of other species. Specimens have been collected in gardens and houses, as well as in ground litter in hedges and open forests. The species is apparently an introduction into North America.

Ozyptila georgiana Keyserling

Figs. 482–487; Map 37

Oxyptila georgiana Keyserling, 1880:52, fig. 26 (pl. 1).
Ozyptila georgiana: Dondale & Redner 1975c:162, figs. 34, 37, 99–102.

Male. Total length approximately 3.50 mm; carapace 1.52 ± 0.10 mm wide (20 specimens measured). Carapace dark red to nearly black, with

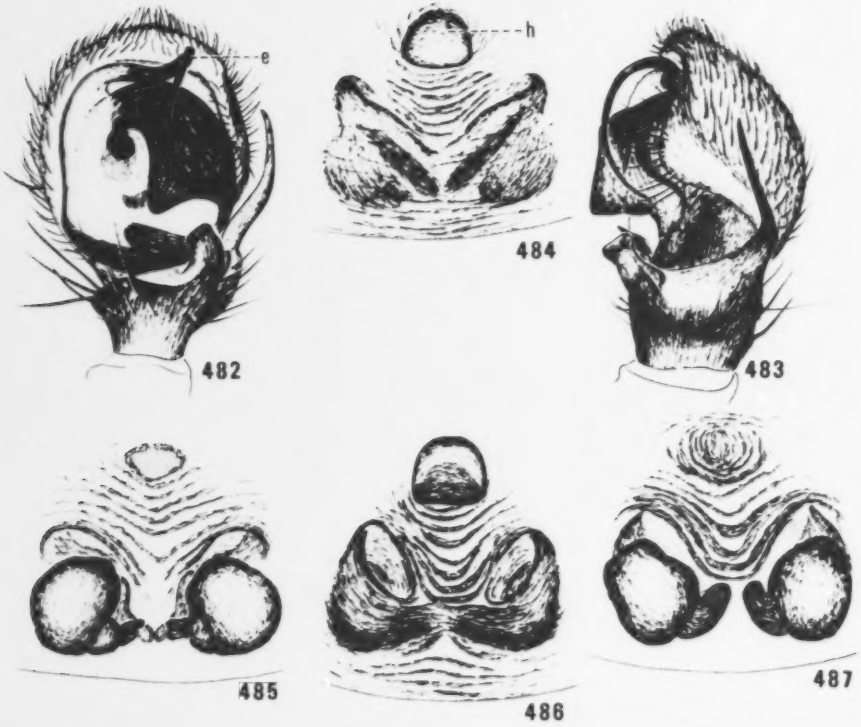
pale median area enclosing brown area posterior to posterior eye row, and with yellow V-shaped mark at dorsal groove; dark lateral areas partly divided by pale red bands. Legs I and II with femora mottled red brown, black, and yellow, and with tibiae and distal segments yellow brown; legs III and IV with femora (basal half), basitarsi, and distitarsi yellow, and with femora (distal half), patellae, and tibiae nearly black; femur I swollen prolaterad; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen red brown, with paired off-white or black spots, and with short clavate setae. Palpal tibia with long slender sinuous retrolateral apophysis, with minute intermediate apophysis, and with stout curved ventral apophysis (Figs. 482, 483). Embolus long, curled, with tip free of tegulum (Fig. 482); tegulum with small tooth near center, and with tooth near proximal margin (Fig. 482).

Female. Total length approximately 4.00 mm; carapace 1.72 ± 0.14 mm wide (29 specimens measured). General structure and color essentially as in male, but some specimens with indistinct speckling ventrad on femora of legs and V-shaped mark on carapace less distinct. Epigynum with shallow wrinkled atrium, and with small hood; copulatory openings nearly encircled by raised sclerites (Figs. 484, 486). Copulatory tubes long, oblique; spermathecae with small anterior part, and with bulbous posterior part (Figs. 485, 487).

Range. North Dakota and southern Ontario to Massachusetts, southward to Georgia.

Comments. The curled embolus of male *O. georgiana* is unique among species of this genus. Females differ from those of other species by having an extensively wrinkled area posterior to the hood of the epigynum and long oblique copulatory tubes, which are often visible through the epigynal integument. Specimens of *georgiana* have been collected in hawthorn scrub and abandoned fields, on lawns, and in open prairie.

Map 37. Collection localities of *Ozyptila georgiana* (●) and *O. conspurcata* (▲).



Figs. 482–487. Genitalia of *Ozyptila georgiana*. 482, Palpus of male, ventral view; 483, Palpus of male, retrolateral view; 484 and 486, Epigynum; 485 and 487, Spermathecae. *e*, embolus; *h*, hood.

Ozyptila gertschi Kurata

Figs. 488–492; Map 38

Ozyptila gertschi Kurata, 1944:1, figs. 1, 2, 5, 6; Dondale & Redner 1975c:145, figs. 10, 13, 55–57.

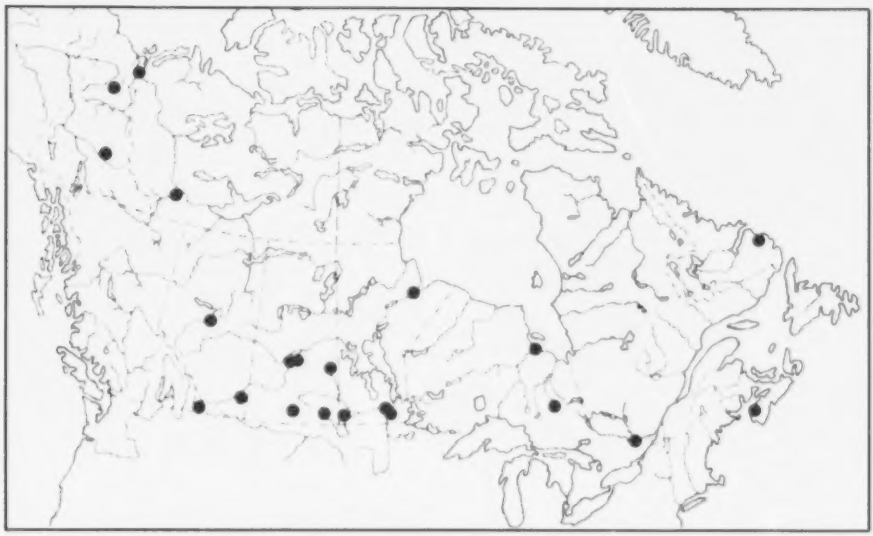
Male. Total length approximately 3.50 mm; carapace 1.47 ± 0.08 mm wide (21 specimens measured). Carapace dark red to nearly black, with red brown median stripe, with V-shaped yellow mark at dorsal groove, and with tapered or untapered setae; dark lateral areas partly divided posteriad by series of yellow brown spots. Legs yellow brown to brown; femora speckled ventrad with dark brown; femur I swollen; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen mottled off-white, yellow brown, and black. Palpal tibia with long slender retrolateral apophysis, with small intermediate apophysis, and with short hooked ventral apophysis (Figs. 488,

489). Embolus short, bent near tip (Fig. 488); tegulum with toothed apophysis near center and with tooth near proximal margin; basal tegular ridge prominent.

Female. Total length approximately 4.00 mm; carapace 1.54 ± 0.10 mm wide (20 specimens measured). General structure and color essentially as in male. Epigynum with shallow atrium having low rim formed of dark lobes, with U-shaped sclerite, and with wide hood (Fig. 490). Spermathecae with slender arched anterior part, and with bulbous posterior part (Figs. 491, 492).

Range. Yukon Territory to Labrador, southward to southern Alberta, North Dakota, and Nova Scotia; Europe.

Comments. The male of *O. gertschi*, as in that of *O. georgiana*, has an unusually long retrolateral apophysis on the palpal tibia. The embolus of *gertschi*, however, does not curl free of the tegulum as it does in *georgiana*.



Map 38. Collection localities of *Ozyptila gertschi*.

Figs. 488–497. Genitalia of *Ozyptila* spp. 488–492, *O. gertschi*. 488, Palpus of male, ventral view; 489, Palpus of male, retrolateral view; 490, Epigynum; 491 and 492, Spermathecae. 493–497, *O. conspurcata*. 493, Palpus of male, ventral view; 494, Palpus of male, retrolateral view; 495, Epigynum; 496 and 497, Spermathecae. *btr*, basal tegular ridge; *tib*, tibia.

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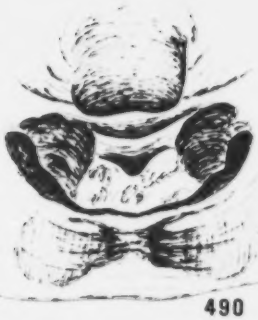

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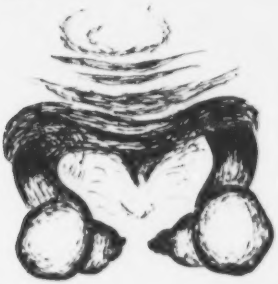

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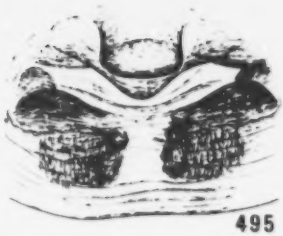

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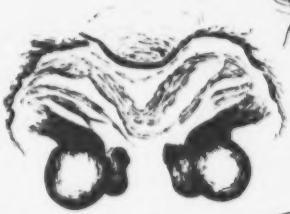

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The epigynum of the female bears a prominent U-shaped sclerite as does that of *O. distans*, *O. curvata*, and *O. beaufortensis*, but the shape and relative length of the anterior and posterior parts of the spermathecae distinguish females of *gertschi* from the others. Specimens of *gertschi* have been collected in marshes.

Ozyptila conspurcata Thorell

Figs. 493–497; Map 37

Oxyptila conspurcata Thorell, 1877:496.
Ozyptila bryantae Gertsch, 1939:348.
Ozyptila conspurcata: Dondale & Redner 1975*c*:146, figs. 11, 14, 58–60.

Male. Total length approximately 2.80 mm; carapace 1.39 ± 0.12 mm wide (32 specimens measured). Carapace dark red brown, faintly mottled with yellow, with yellow V-shaped mark at dorsal groove, and with clavate setae. Legs pale red brown; femora nearly black or with small off-white spots; femur I swollen; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen pale red brown to black, with short clavate setae. Palpal tibia with erect fingerlike retrolateral apophysis, with minute intermediate apophysis, and with stout knobbed ventral apophysis (Figs. 493, 494). Embolus short (Fig. 493); tegulum with small divided tooth near center (Fig. 493); basal tegular ridge (*btr*) broad, lacking teeth (Fig. 493).

Female. Total length approximately 3.50 mm; carapace 1.47 ± 0.23 mm wide (32 specimens measured). General structure and color essentially as in male, but somewhat paler. Epigynum with shallow Y-shaped atrium, and with short wide hood (Fig. 495). Spermathecae with short divergent anterior part (Figs. 496, 497).

Range. Southern Alberta to Manitoba, southward to California and New Mexico.

Comments. Males of *O. conspurcata* are distinguished from those of similar species by the lack of teeth on the basal tegular ridge and the divided tegular ridge of the palpus. Females are identifiable by the pale Y-shaped atrium of the epigynum. Specimens of *conspurcata* have been collected in fields, in pine and fir forests, and occasionally in talus on high mountains or in bird nests.

Ozyptila monroensis Keyserling

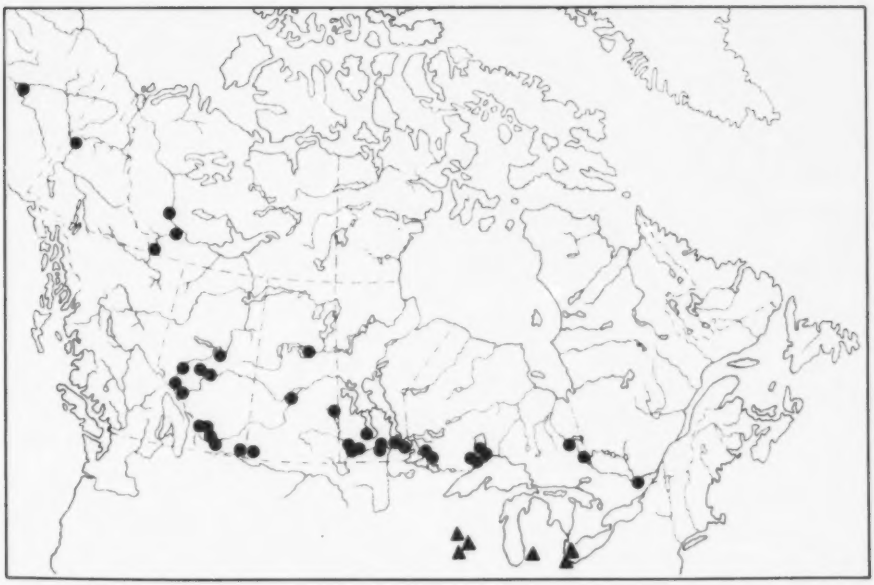
Figs. 498–502; Map 39

Oxyptila monroensis Keyserling, 1884*a*:671, fig. 19.
Ozyptila neglecta Bryant, 1930*b*:386, figs. 11, 14.
Ozyptila monroensis: Dondale & Redner 1975*c*:148, figs. 15, 16, 61–63.

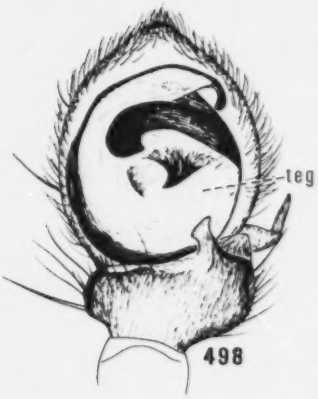
Male. Total length approximately 2.75 mm; carapace 1.41 ± 0.10 mm wide (20 specimens measured). Carapace dark red brown to nearly black, with yellow eye area, with median band that is often reduced to Y-shaped mark at dorsal groove, and with clavate setae. Legs red brown; femora darkest and patellae and distitarsi lightest; femur I swollen; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen pale red brown with black pattern, with short clavate setae. Palpal tibia greatly expanded distally, with angulate fingerlike retrolateral apophysis, and with short stout ventral apophysis (Figs. 498, 500). Embolus short, strongly narrowed, bent near tip (Fig. 498). Tegulum (*teg*) with short tooth near center, and with pale swelling basad of tooth (Fig. 498); basal tegular ridge broad, thick, not raised at edge, without teeth (Fig. 498).

Female. Total length approximately 3.50 mm; carapace 1.46 ± 0.09 mm wide (20 specimens measured). General structure and color essentially as in male, but somewhat paler, and the carapace and legs often orange or orange brown. Epigynum with poorly defined atrium containing deep V-shaped groove, and with small hood; copulatory openings marked by rounded sclerites (Fig. 499). Spermathecae with inconspicuous anterior part, and with large rounded posterior part (Figs. 501, 502).

Range. Wisconsin and southern Ontario to Pennsylvania, southward to Texas.



Map 39. Collection localities of *Ozyptila monroensis* (▲) and *O. sincera canadensis* (●).



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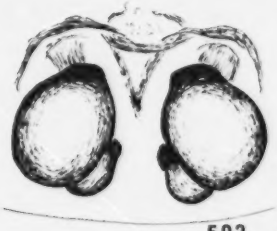

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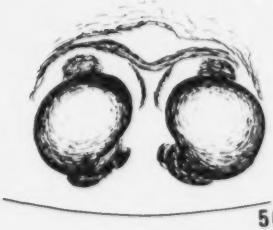

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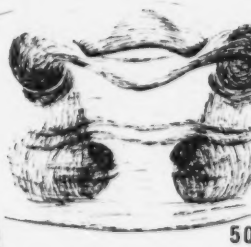

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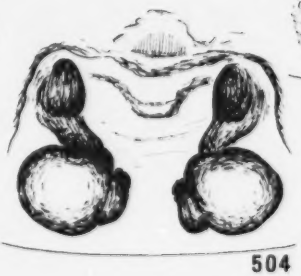

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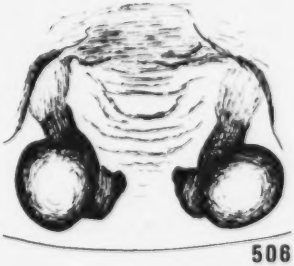

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Comments. The male of *O. monroensis* can be separated from those of similar species by the lack of teeth on the basal tegular ridge and by the pale swelling on the tegulum basad of the tegular apophysis. In the female the paired rounded sclerites at the level of the hood and the deep V-shaped groove of the epigynum are diagnostic. Specimens of *monroensis* have been collected in abandoned fields and in leaf mold and litter in deciduous forest.

Ozyptila sincera canadensis Dondale & Redner

Figs. 418, 422, 503–507; Map 39

Ozyptila sincera canadensis Dondale & Redner, 1975*c*:149, figs. 17, 18, 20, 21, 41, 64–67.

Male. Total length approximately 2.50 mm; carapace 1.36 ± 0.07 mm wide (24 specimens measured). Carapace orange brown to brown, with yellow V-shaped mark, often margined with dark brown at dorsal groove, and with tapered or untapered setae; lateral areas faintly mottled with yellow. Legs light orange brown to black, often yellow at bases of femora and on distitarsi; femora lightly speckled ventrad with brown; femur I swollen; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen nearly black, with short clavate setae. Palpal tibia with curved fingerlike retrolateral apophysis, with short blunt intermediate apophysis, and with stout knobbed ventral apophysis (Figs. 505, 507). Embolus short, tapered, bent near tip (Fig. 505). Tegulum with short broad tooth near middle; basal tegular ridge broad, with proximal edge raised, with undulating margin, and without teeth (Fig. 505).

Female. Total length approximately 3.00 mm; carapace 1.40 ± 0.07 mm wide (21 specimens measured). General structure and color essentially as in male, but somewhat paler, and lateral areas of carapace often divided by yellow longitudinal band (Fig. 422). Epigynum with shallow atrium, with distinct round sclerites at copulatory openings, and with broad pale hood (Fig. 503). Spermathecae with slender anterior part, and with bulbous posterior part (Figs. 504, 506).

Range. Alaska to eastern Ontario, southward to Colorado.

Comments. The male *O. sincera canadensis* mainly resembles that of *O. monroensis* and of *O. conspurcata*, but lacks the tegular swelling found in males of *monroensis* and lacks the divided tegular apophysis found in

Figs. 498–507. Genitalia of *Ozyptila* spp. 498–502, *O. monroensis*. 498, Palpus of male, ventral view; 499, Epigynum; 500, Palpus of male, retrolateral view; 501 and 502, Spermathecae. 503–507, *O. sincera canadensis*. 503, Epigynum; 504 and 506, Spermathecae; 505, Palpus of male, ventral view; 507, Palpus of male, retrolateral view. *teg*, tegulum.

conspurcata. The female *O. sincera canadensis* lacks the V-shaped epigynal groove of female *monroensis* and lacks the triangular sclerite posterior to the hood in females of *conspurcata*. Two North American subspecies have been described, *O. sincera canadensis* Dondale & Redner from the boreal forest zone and *O. sincera oraria* Dondale & Redner from the east coast of the United States. Specimens of *sincera canadensis* have been collected from litter and sphagnum moss in larch swamps, from the floor of spruce–poplar or lodgepole pine forests, and occasionally from the stomachs of frogs.

Ozyptila americana Banks

Figs. 508–511; Map 40

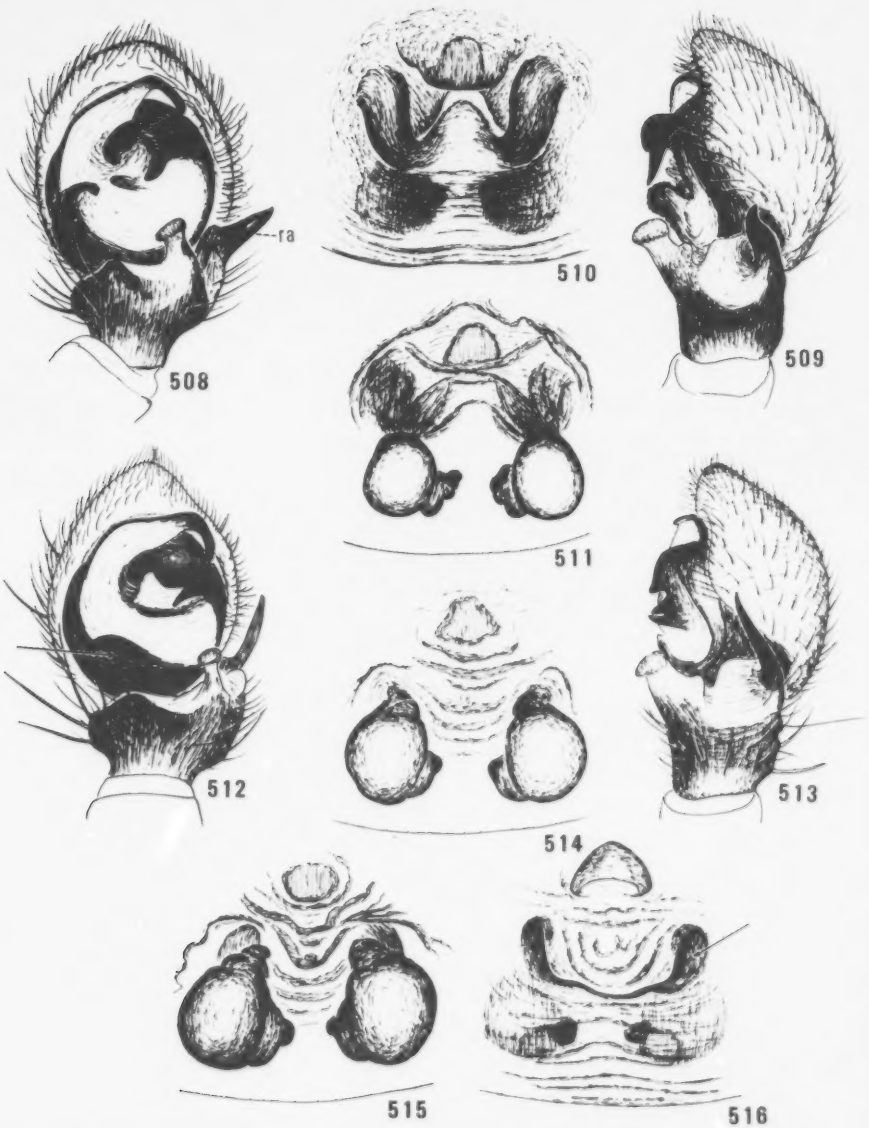
Oxyptila americana Banks, 1895*b*:242.
Ozyptila barrowsi Gertsch, 1939:348, figs. 120, 121.
Ozyptila americana: Dondale & Redner 1975*c*:157, figs. 30, 33, 95, 96.

Male. Total length approximately 3.25 mm; carapace 1.75 ± 0.19 mm wide (20 specimens measured). Carapace dark red brown to nearly black, with yellow eye area, with V-shaped mark at dorsal groove, and with clavate setae; lateral areas divided longitudinally by series of red yellow spots. Legs dark red brown, with yellow tarsi; femora II–IV off-white on basal half; femur I swollen prolaterad; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen pale red brown, with off-white or black spots and transverse streaks, and with clavate setae. Palpal tibia with stout bent fingerlike retrolateral apophysis, with minute intermediate apophysis, and with hooked ventral apophysis (Figs. 508, 509). Embolus short, bent in two planes near tip (Fig. 508); tegulum with small ridgelike tooth near center, and with large concave tooth near prolaterobasal margin (Fig. 508); basal tegular ridge broad, raised along proximal margin, with one large tooth (Fig. 508).

Female. Total length approximately 3.75 mm; carapace 1.72 ± 0.15 mm wide (20 specimens measured). General structure and color essentially as in male, but paler; lateral areas of carapace dark at posterolateral margins, grading to dull yellow; femora and tibiae sometimes brown with darker speckling. Epigynum with W-shaped atrium, with large oblique sclerites marking copulatory openings, and with moderately large hood (Fig. 510). Spermathecae with broad anterior part, and with rather small bulbous posterior part (Fig. 511).

Range. Iowa to eastern Ontario, southward to Texas and Virginia.

Comments. The bent retrolateral apophysis and the large concave tooth near the prolaterobasal margin of the palpus separate males of *O. americana* from those of other species. The W-shaped epigynal atrium is diagnostic for females. Specimens of *americana* have been collected on the ground under hawthorn scrub and in hayfields and swamps.



Figs. 508–516. Genitalia of *Ozyptila* spp. 508–511, *O. americana*. 508, Palpus of male, ventral view; 509, Palpus of male, retrolateral view; 510, Epigynum; 511, Spermathecae. 512–516, *O. distans*. 512, Palpus of male, ventral view; 513, Palpus of male, retrolateral view; 514 and 515, Spermathecae; 516, Epigynum. *ra*, retrolateral apophysis.

Ozyptila distans Dondale & Redner

Figs. 512–516; Map 41

Ozyptila distans Dondale & Redner, 1975*c*:153, figs. 19, 22, 74–76.

Male. Total length approximately 3.25 mm; carapace 1.59 ± 0.12 mm wide (19 specimens measured). Carapace dark red brown, with yellow eye area, with V-shaped mark at dorsal groove, and with tapered and untapered setae; lateral areas divided longitudinally by yellow bands. Legs yellow brown to red brown, with tips of femur III, patellae, and tibiae III and IV nearly black; femur I swollen prolaterad; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen red brown, with many small black spots or bands, and with numerous clavate setae. Palpal tibia with slender retrolateral apophysis, with minute intermediate apophysis, and with hooked ventral apophysis (Figs. 512, 513). Embolus short, bent near tip (Fig. 512); tegulum with ridgelike tooth near center, and with broad sclerotized area near prolaterobasal margin (Fig. 512); basal tegular ridge broad, bearing one tooth (Fig. 512).

Female. Total length approximately 3.50 mm; carapace 1.58 ± 0.08 mm wide (21 specimens measured). General structure and color essentially as in male, but legs sometimes with off-white mottling. Epigynum with shallow atrium containing U-shaped sclerite, and with short hood (Fig. 516). Spermathecae with short anterior part, and with bulbous posterior part (Figs. 514, 515).

Range. Wisconsin to Newfoundland, southward in the Appalachian Mountains to Tennessee and North Carolina.

Comments. Males of *O. distans* can be separated from those of *O. americana* and *O. beaufortensis* by the presence of a broad sclerotized area near the prolaterobasal margin of the palpal tegulum. Females of *distans* resemble those of *O. gertschi*, *beaufortensis*, and *O. curvata* by possessing a U-shaped epigynal sclerite. In *distans* the anterior part of the spermatheca is shorter than the posterior part, a condition not found in females of *gertschi*; the relative slenderness of the U-shaped epigynal sclerite is not found in females of *beaufortensis* or *curvata*. Specimens of *distans* have been collected in swamps, sphagnum bogs, abandoned fields, and pine litter.

Ozyptila beaufortensis Strand

Figs. 517–523; Map 40

Oxyptila beaufortensis Strand, 1916:124.
Oxyptila bison Gertsch, 1953:468, figs. 85–87.
Ozyptila beaufortensis: Dondale & Redner 1975*c*:155, figs. 25, 28, 84–88.

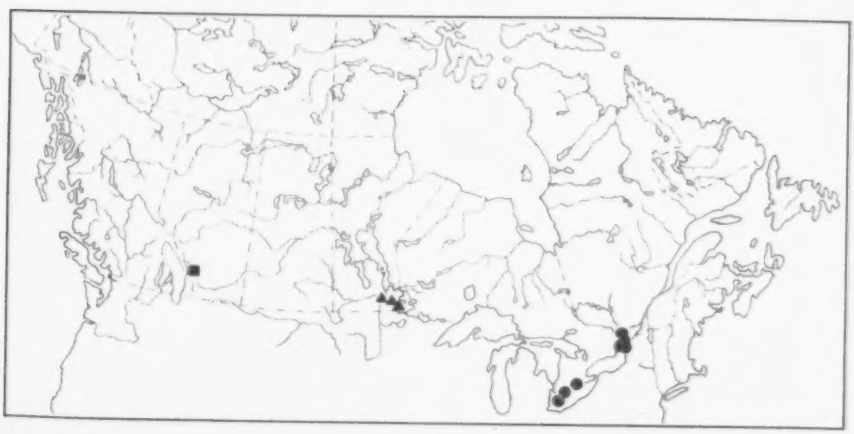
Male. Total length approximately 3.00 mm; carapace 1.27–1.50 mm wide (seven specimens measured). Carapace dark red brown, with yellow eye

area, with yellow V-shaped mark at dorsal groove, and with clavate setae; lateral areas divided longitudinally by pale band. Legs red brown, with trochanters and femora speckled with black; femur I swollen prolaterad; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen red brown, with many indistinct black spots or bands, and with clavate setae. Palpal tibia with fingerlike retrolateral apophysis, with minute intermediate apophysis, and with hooked ventral apophysis (Figs. 517, 518). Embolus short, bent near tip (Fig. 517); tegulum with toothed ridge near center, and with short slender tooth near prolaterobasal margin (Fig. 517); basal tegular ridge broad, raised along proximal margin, bearing one tooth (Fig. 517).

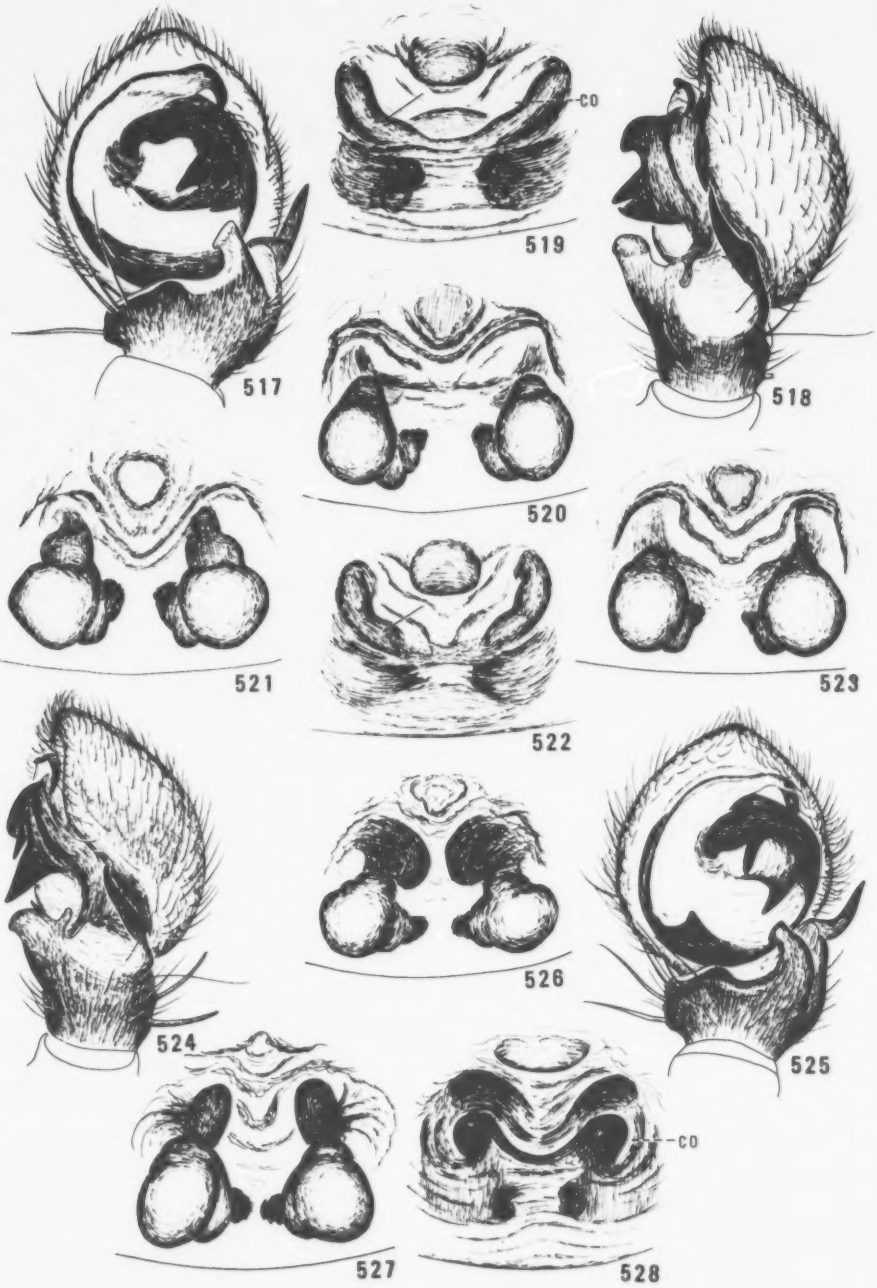
Female. Total length approximately 3.75 mm; carapace 1.48–1.67 mm wide (nine specimens measured). General structure and color essentially as in male, but somewhat paler. Epigynum with procurved wrinkles, with shallow atrium containing oblique curved sclerites at copulatory openings, and with broad hood (Figs. 519, 522). Spermathecae with short inconspicuous anterior part, and with bulbous posterior part (Figs. 520, 521, 523).

Range. Alberta to Colorado.

Comments. Males of *O. beaufortensis* mainly resemble those of *O. americana* and *O. distans*, but differ by not having a large concave tooth or a broad sclerotized area on the palpal tegulum. Females mainly resemble those of *O. gertschi*, *distans*, and *O. curvata*. The anterior part of the spermatheca is shorter than the posterior part in *beaufortensis*, unlike the condition found in female *gertschi*. The U-shaped epigynal sclerite is less slender in *beaufortensis* than in females of *distans*, and the epigynal wrinkles, which are procurved rather than straight, distinguish *beaufortensis* from *curvata*. The habitat of *beaufortensis* is unrecorded.



Map 40. Collection localities of *Ozyptila americana* (●), *O. beaufortensis* (■), and *O. curvata* (▲).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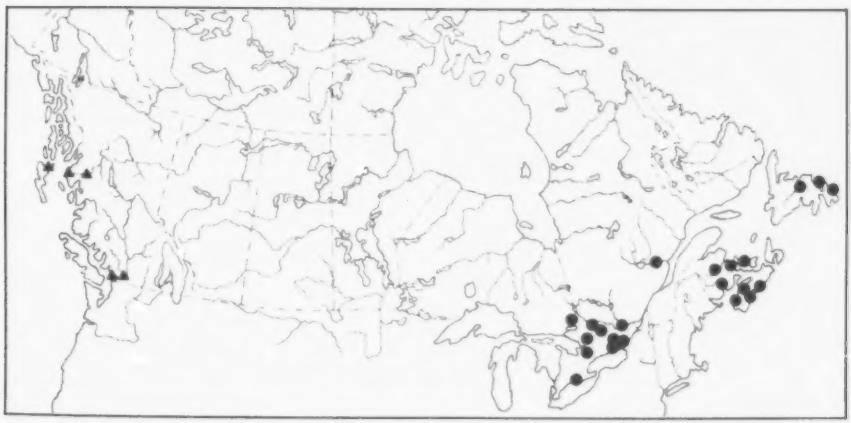
Ozyptila pacifica Banks

Figs. 524–528; Map 41

Oxyptila pacifica Banks, 1895*b*:243.
Ozyptila pacifica: Dondale & Redner 1975*c*:159, figs. 23, 24, 77–79.

Male. Total length approximately 3.25 mm; carapace 1.46–1.59 mm wide (nine specimens measured). Carapace red brown, with yellow eye area, with V-shaped mark anterior to dorsal groove, and with clavate setae; lateral areas divided longitudinally by red or yellow band. Legs red brown or yellow brown, with femora and trochanters usually spotted with black and off-white; tibiae with dark ring near base; femur I swollen; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen red brown, with off-white or black spots and bands, and with short clavate setae. Palpal tibia with fingerlike retrolateral apophysis, with minute intermediate apophysis, and with stout curved ventral apophysis (Figs. 524, 525). Embolus short, bent near tip (Fig. 525); tegulum with short sharp tooth near prolaterobasal margin; basal tegular ridge broad, raised, with two sharp teeth that are well separated and of different shape.



Map 41. Collection localities of *Ozyptila distans* (●) and *O. pacifica* (▲).

Figs. 517–528. Genitalia of *Ozyptila* spp. 517–523, *O. beaufortensis*. 517, Palpus of male, ventral view; 518, Palpus of male, retrolateral view; 519 and 522, Epigynum; 520, 521, and 523, Spermathecae. 524–528, *O. pacifica*. 524, Palpus of male, retrolateral view; 525, Palpus of male, ventral view; 526 and 527, Spermathecae; 528, Epigynum. *co*, copulatory opening.

Female. Total length approximately 4.00 mm; carapace 1.42–1.71 mm wide (eight specimens measured). General structure and color essentially as in male, but paler; carapace and legs usually with little or no black pigmentation; leg spots brown. Epigynum with short hood, and with two procurved sclerites posterior to hood (Fig. 528). Spermathecae with expanded anterior part, and with bulbous posterior part (Figs. 526, 527).

Range. Coastal British Columbia to Oregon.

Comments. Males of *O. pacifica* differ from those of other species by having the two teeth on the basal tegular ridge well separated and of different shape. Females are distinguished by the presence of two procurved sclerites posterior to the epigynal hood. Specimens have been collected by Berlese funnels from moss, bark, and litter in hemlock or cedar–hemlock forests.

Ozyptila curvata Dondale & Redner

Figs. 529–537; Map 40

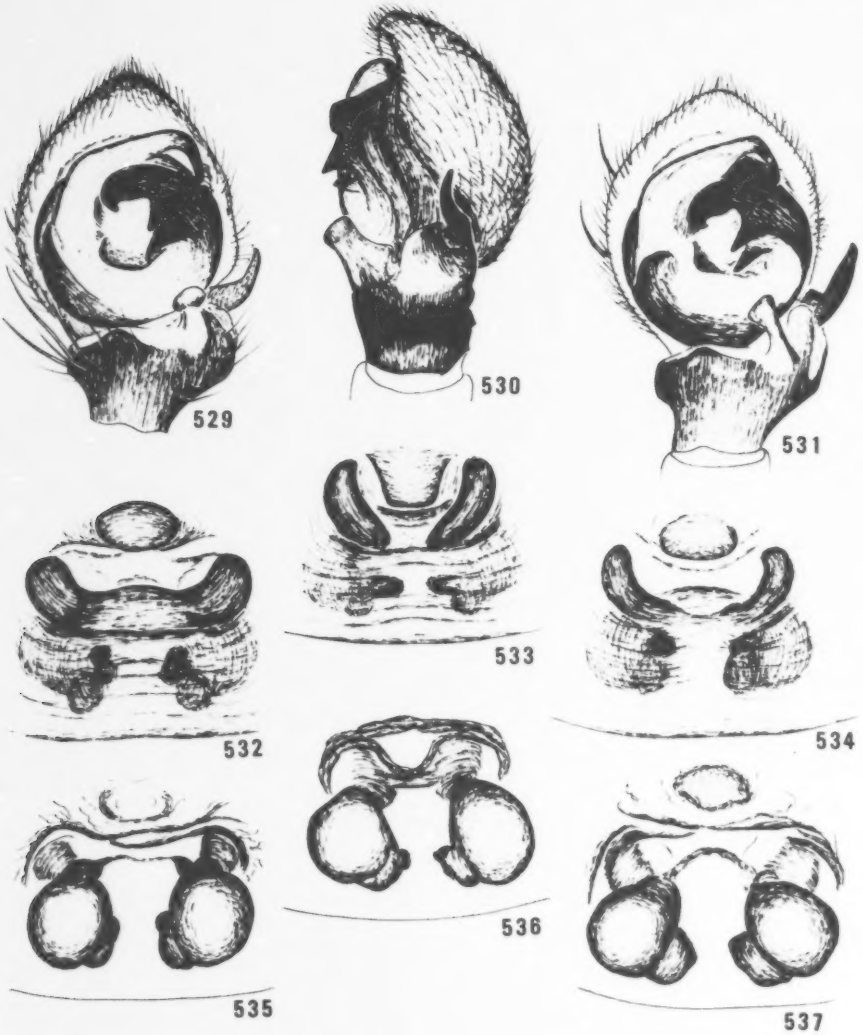
Ozyptila curvata Dondale & Redner, 1975*c*:156, figs. 26, 27, 29, 89–94.

Male. Total length approximately 3.00 mm; carapace 1.41–1.54 mm wide (five specimens measured). Carapace dark red brown to black, sometimes with yellow eye area, with indistinct V-shaped mark at dorsal groove, and with clavate setae; lateral areas sometimes indistinctly divided by longitudinal pale red band. Legs dark red brown to nearly black, sometimes spotted with off-white on femora, patellae, and tibiae; basal part of femora II–IV, and tarsi of all legs, pale yellow; femur I swollen; tibia I with two pairs of ventral macrosetae. Dorsum of abdomen red brown, with off-white or black spots, and with clavate setae. Palpal tibia with bent retrolateral apophysis, with minute intermediate apophysis, and with knobbed ventral apophysis (Figs. 529–531). Embolus short, bent basad and ventrad at tip (Figs. 529, 531); tegulum with ridgelike tooth near center, and with flattened blunt tooth on prolateral margin; basal tegular ridge broad, with two stout teeth that are close together (Figs. 529, 531).

Female. Total length approximately 4.00 mm; carapace 1.36–1.79 mm wide (eight specimens measured). General structure and color essentially as in male, but yellow areas of carapace and legs more extensive. Epigynum with small hood, and with thick oblique sclerites at copulatory openings; wrinkles not undulating (Figs. 532–534). Spermathecae with very short anterior part, and with bulbous posterior part (Figs. 535–537).

Range. Manitoba to Massachusetts, southward to Virginia.

Comments. The closely spaced teeth of equal size on the basal tegular ridge of the male, and the uncurved epigynal wrinkles, oblique sclerites, and very short anterior part of the spermathecae, distinguish specimens of *O. curvata* from those of other species. Specimens have been collected in bogs and coniferous forest litter.



Figs. 529–537. Genitalia of *Ozyptila curvata*. 529 and 531, Palpus of male, ventral view; 530, Palpus of male, retrolateral view; 532–534, Epigynum; 535–537, Spermathecae.

Genus *Xysticus* C.L. Koch

Spiders of the genus *Xysticus* are hard-bodied, rather bristly, slow-moving creatures of typical crablike appearance and locomotion. Their powerful forelegs are used to grapple prey at close range, and their colors blend with the dull yellows, browns, and reds of the ground cover in which most of them live. Spiders of this genus are common inhabitants of forest litter, open fields, and meadows, though representatives of a few species, such as *X. punctatus*, can be found on tree foliage and others climb herbs and shrubs.

Description. Total length 4.00–8.70 mm. Carapace usually slightly longer than wide, rather convex dorsally, always higher at level of leg III than at level of posterior row of eyes, usually without clavate setae; front nearly vertical; lateral areas dark, often mottled. Eyes in two transverse recurved rows; lateral eyes larger than median eyes, seated on large separate tubercles. Legs long, rather stout, without scopulae or claw tufts; legs I and II nearly equal in length, much longer and stronger than legs III and IV, which are also approximately equal in length; femur I with up to 10 or more erect macrosetae; tibia I with four or five pairs of ventral macrosetae; tarsi with two claws. Abdomen rotund, rather flattened, usually with erect simple setae, and often with paired transverse dark markings on off-white to brown background. Palpal tibia of male with retrolateral and ventral apophyses, and sometimes with intermediate apophysis. Embolus long, fine, with pars pendula, sometimes with apical sclerite, and arising simply along basal, prolateral, or distal margin of tegulum, arching around distal end of tegulum, and terminating along grooved conductor; tegulum large, flat, nearly circular in ventral view, with one or two apophyses of different shape near center or with variously shaped tegular ridge. Epigynum of female with distinct excavated atrium, and usually with median septum or paired sclerites. Copulatory tubes usually visible in dorsal view of dissected specimens, varying in shape with species. Spermathecae heavily sclerotized, varying in shape according to species.

Comments. Representatives of *Xysticus* spp. (Fig. 421) mainly resemble those of *Coriarachne* and *Ozyptila* in general structure and color. They lack the flattened body found in specimens of *Coriarachne* spp. and the modified femur and tibia of leg I found in specimens of *Ozyptila* spp. Individuals of only a few species of *Xysticus*, such as *X. nigromaculatus*, possess clavate body setae, and none have the lateral eye tubercles obviously conjoined (Fig. 420) or the front greatly produced anteriorly. The epigynum usually lacks a hood. Dondale (1977) described the life histories of three species.

Approximately 200 species of *Xysticus* are known in the world, 56 of which occur in North America. Forty species occur or are assumed to occur in Canada (Turnbull et al. 1965).

Key to species of *Xysticus*

(Male *X. posti* and *X. leechi* and female *X. winnipegensis* are unknown)

1. Male palpus with tegular apophyses (*ta*) in form of pair of simple hooks, the tips of which are curved toward each other (Figs. 538, 554). Epigynum of female with paired raised hard atrial sclerites (*ats*) (Figs. 541, 556) (except in *auctificus* and *posti*, Figs. 569, 574) 2

Male palpus with tegular apophyses not hooklike, sometimes reduced to one or none (Figs. 615, 657, 667). Epigynum without atrial sclerites (Figs. 619, 662, 668) 26

2(1). Male palpus with distal tegular apophysis located prolaterodistad of basal apophysis, and with pars pendula (*pp*) terminating at about 270° (Figs. 538, 547). Epigynum of female with large rounded atrial sclerites (*ats*) occupying posterior half of atrium (Figs. 541, 550). Spiders maturing in August or September 3

Male palpus with distal tegular apophysis located distad or retrolaterad of basal tegular apophysis (Fig. 558), and with pars pendula terminating at more than or less than 270°. Epigynum of female with atrial sclerites either small and oval (Fig. 556) or elongate (Fig. 563), not restricted to posterior half of atrium. Spiders maturing in spring 4

3(2). Male palpus with cymbium conspicuously expanded on retrolateral side, and with long conductor (*con*) (Figs. 538, 540). Carapace of male usually gray (Fig. 539). Epigynum of female with atrial sclerites usually oval (Figs. 541, 544), and with anterior loops of copulatory tubes (*ct*) usually angular (Figs. 543, 545, 546) ..... ***gulosus*** **Keyserling,** p. 179

Male palpus with cymbium not conspicuously expanded on retrolateral side, and with short conductor (Figs. 547, 549). Carapace of male usually dark red brown (Fig. 548). Epigynum of female with atrial sclerites usually round (Fig. 550), and with anterior loops of copulatory tubes rounded (Figs. 551–553) ..... ***pellax*** **O. Pickard-Cambridge,** p. 181

4(2). Male palpus with distal tegular apophysis situated directly retrolaterad of basal tegular apophysis (Fig. 554). Epigynum of female with small oval well-separated atrial sclerites (Fig. 556), and with copulatory tubes not visible in dorsal view (Fig. 555) ..... ***pretiosus*** **Gertsch,** p. 183

Male palpus with distal tegular apophysis situated distad or retrolaterodistad of basal tegular apophysis. Epigynum of female with large elongate atrial sclerites that are close together, and with copulatory tubes visible in dorsal view (Figs. 562, 563, 572, 574) 5

5(4). Male palpus with distal tegular apophysis situated directly distad of basal tegular apophysis (Figs. 558, 565). Copulatory tubes of female forming long slender loops anteriad of spermathecae (Figs. 562, 566) 6

Male palpus with distal tegular apophysis not situated directly distad of basal tegular apophysis (Figs. 571, 576). Copulatory tubes of female not forming long slender loops anteriad of spermathecae (Figs. 572, 575) 7

6(5). Male palpus with cymbium widest in distal third, and with conductor tip fingerlike (Fig. 558). Copulatory tubes of female usually forming open loops; spermathecae indented near middle of lateral margin (Figs. 562, 564) ..... ***locuples*** **Keyserling,** p. 184

Male palpus with cymbium not widest in distal third, and with conductor tip triangular (Fig. 565). Copulatory tubes of female usually not forming open loops; spermathecae not indented near middle of lateral margin (Fig. 566) ..... ***gosiutus*** **Gertsch,** p. 186

7(5). Male palpus with distal tegular apophysis lying against tegulum (Figs. 571, 573) (male of *X. posti* unknown). Epigynum of female with indistinct atrial sclerites, and with median septum (*ms*) essentially parallel-sided (Figs. 569, 574) 8

Male palpus with distal tegular apophysis not lying against tegulum (Figs. 576, 578). Epigynum of female with distinct sclerites and with median septum (*ms*) that is not parallel-sided (Fig. 577) 9

8(7). Spermathecae crescent-shaped (Fig. 570) ..... ***posti*** **Sauer,** p. 187
Spermathecae convoluted (Fig. 572). Male palpus with distal tegular apophysis lying against tegulum (Figs. 571, 573) ..... ***auctificus*** **Keyserling,** p. 188

9(7). Male 10

Female 18

10(9). Distal tegular apophysis broad, thickened at middle (Figs. 578, 580, 588, 592) 11

Distal tegular apophysis slender (Fig. 595) or tapered from base to tip (Fig. 608) 14

11(10). Embolus (*e*) flattened at tip (Fig. 576) ..... ***triguttatus*** **Keyserling,** p. 190
Embolus not flattened at tip 12

12(11). Ventral tibial apophysis (*va*) slender at base (Fig. 579); distal tegular apophysis with shallow undulation in basal margin (Figs. 580, 581) ..... ***chippewa*** **Gertsch,** p. 191

Ventral tibial apophysis stout at base (Figs. 585, 589); distal tegular apophysis without undulation in basal margin (Figs. 588, 592) 13

13(12). Distal tegular apophysis approximately as wide as long (Fig. 585) .... ***discursans*** **Keyserling,** p. 193

Distal tegular apophysis not as wide as long (Fig. 589) ..... ***fervidus*** **Gertsch,** p. 195

14(10). Distal tegular apophysis with distinct "heel," approximately as long as ventral tegular apophysis (Fig. 593) ..... ***bicuspis*** **Keyserling,** p. 196

Distal tegular apophysis without distinct "heel," longer than ventral tegular apophysis 15

15(14). Ventral tibial apophysis with base expanded (Fig. 597) ..... ***ampullatus*** **Turnbull et al.,** p. 198

Ventral tibial apophysis with base not expanded 16

16(15). Distal tegular apophysis angular in basal half (Fig. 605) ..... ***acquiescens*** **Emerton,** p. 199

Distal tegular apophysis not angular in basal half 17

17(16). Distal tegular apophysis widest at base, tapered from base to tip (Fig. 608) ..... ***canadensis*** **Gertsch,** p. 200

Distal tegular apophysis not widest at base, not tapered except at distal hook (Fig. 614) ..... ***britcheri*** **Gertsch,** p. 201

18(9). Atrial sclerites converging posteriad (Fig. 577) 19
Atrial sclerites diverging posteriad (Figs. 596, 598) 24

19(18). Atrial sclerites arched away from midline (Figs. 577, 587) 20
Atrial sclerites nearly straight (Figs. 584, 609) 22

20(19). Spermathecae widest at middle; copulatory tubes extending posteriad between spermathecae (Fig. 586) ..... ***discursans*** **Keyserling,** p. 193

Spermathecae not widest at middle; copulatory tubes not extending posteriad between spermathecae 21

21(20). Atrium extending beneath anterior rim of epigynum (Fig. 590); copulatory tubes bent posteriad (Fig. 591) ..... ***fervidus*** **Gertsch,** p. 195

Atrium not extending beneath anterior rim of epigynum (Fig. 577); copulatory tubes not bent posteriad (Fig. 575) ..... ***triguttatus*** **Keyserling,** p. 190

22(19). Atrial sclerites touching (Fig. 613) or nearly touching (Fig. 584) at midline 23

Atrial sclerites separated at midline (Fig. 609) .... ***canadensis*** **Gertsch,** p. 200

23(22). Spermathecae distinctly grooved (Fig. 583) ..... ***chippewa*** **Gertsch,** p. 191

Spermathecae not distinctly grooved (Fig. 612) .... ***britcheri*** **Gertsch,** p. 201

24(18). Atrial sclerites close together anteriad (Figs. 596, 604) 25

Atrial sclerites well-separated anteriad (Fig. 598) ..... ***ampullatus*** **Turnbull et al.,** p. 198

25(24). Atrial sclerites shorter than atrium; area between the sclerites not concave (Fig. 596) ..... ***bicuspis*** **Keyserling,** p. 196

Atrial sclerites as long as atrium; area between the sclerites concave (Fig. 604) ..... ***acquiescens*** **Emerton,** p. 199

26(1). Male palpus with tegular apophyses crossed; distal apophysis never T-shaped (Figs. 615, 635). Epigynum of female lacking high median septum, with deep atrium, and often with atrial ledge (*atl*) (Figs. 619, 623, 626, 634, 637) 27

Male palpus with tegular apophyses not crossed; distal apophysis if present sometimes T-shaped (Figs. 640, 645). Epigynum of female with shallow atrium, usually with median septum, never with atrial ledge (Figs. 644, 646) 31

27(26). Male palpus with distal tegular apophysis "heeled" (Figs. 615, 620). Epigynum of female with atrial ledge (*atl*) (Figs. 619, 623); spermathecae joined at midline (Figs. 618, 624) 28

Male palpus with distal tegular apophysis not "heeled" (Figs. 631, 635). Epigynum of female without atrial ledge (Figs. 634, 637); spermathecae not joined at midline (Figs. 632, 636) 30

28(27). Male palpus with basal tegular apophysis not extending to margin of cymbium (Fig. 615). Epigynum with atrium widest posteriad (Fig. 619) ..... ***luctans* (C.L. Koch),** p. 203

Male palpus with basal tegular apophysis extending to or beyond margin of cymbium (Figs. 620, 625). Epigynum with atrium widest anteriad or round (Figs. 623, 626) 29

29(28). Male palpus with basal tegular apophysis slender throughout its length (Fig. 620). Epigynum with atrial ledge occupying approximately two-thirds of atrium (Fig. 623) ..... ***emertoni* Keyserling,** p. 206

Male palpus with basal tegular apophysis broad, nearly truncate (Fig. 625). Epigynum with atrial ledge occupying less than two-thirds of atrium (Fig. 626) ..... ***obscurus* Collett,** p. 207

30(27). Male palpus with distal tegular apophysis approximately as broad as long (Fig. 631). Epigynum of female with atrium extending anteriad under rim of epigynum (Fig. 634) ..... ***elegans* Keyserling,** p. 209

Male palpus with distal tegular apophysis not as broad as long (Fig. 635). Epigynum of female with atrium not extending anteriad beneath rim of epigynum (Figs. 637, 638) ..... ***funestus* Keyserling,** p. 211

31(26). Embolus of male palpus with apical sclerite (*aps*) (Figs. 640, 649); tegulum with one or two apophyses. Epigynum with median septum that narrows anteriad and occupies anterior half of atrium (Figs. 644, 652) (except *fraternus*, Fig. 646) 32

Embolus of male palpus without apical sclerite; tegulum without tegular apophyses. Epigynum with median septum that does not narrow anteriad or occupy anterior half of atrium (or median septum absent) 36

32(31). Male palpus with two tegular apophyses (*ta*) (Figs. 640, 645). Spermathecae of female stout (Figs. 643, 647) 33

Male palpus with one tegular apophysis (*ta*) (Figs. 649, 657). Spermathecae of female slender (Figs. 650, 663) 34

33(32). Male palpus with short curved basal tegular apophysis (Fig. 640). Spermathecae of female with copulatory tubes situated partly at midline (Fig. 643) ..... ***ferox*** **(Hentz),** p. 212

Male palpus with long nearly straight basal tegular apophysis (Fig. 645). Spermathecae of female with copulatory tubes not situated at midline (Fig. 647) ..... ***fraternus*** **Banks,** p. 214

34(32). Male embolus with cluster of teeth at tip of apical sclerite (Fig. 649). Epigynum of female with median septum concave at sides (Fig. 652) ..... ***banksi*** **Bryant,** p. 215

Male embolus without cluster of teeth at tip of apical sclerite (Figs. 653, 657). Epigynum of female with median septum convex at sides (Figs. 654, 662) 35

35(34). Male embolus with tooth on apical sclerite (Fig. 653). Epigynum of female with median septum extending only one-half length of atrium (Fig. 654); copulatory tubes originating anteriad (Fig. 655) ..... ***gertschi*** **Schick,** p. 217

Male embolus without tooth on apical sclerite (Fig. 657). Epigynum of female with median septum more than one-half length of atrium (Fig. 662); copulatory tubes originating posteriad (Figs. 663–666) ..... ***cunctator*** **Thorell,** p. 217

36(31). Embolus of male coiled (Fig. 721). Epigynum of female with atrium approximately as broad as long (Fig. 722) 50

Embolus of male not coiled. Epigynum of female with atrium not as broad as long 37

37(36). Tegular ridge of male a small cusp or sharp tooth situated near periphery of tegulum (Figs. 667, 672, 690). Atrium of female elliptical or oval, smooth-floored, with small median septum that often extends posteriad of atrial rim (Figs. 668, 675, 691) 38

Tegular ridge of male not a cusp or sharp tooth situated near periphery of tegulum (Figs. 694, 698, 702). Atrium of female not elliptical or oval, not smooth-floored, with large median septum not extending posteriad of atrial rim (Figs. 697, 701, 703) 43

38(37). Embolus of male originating on tegulum at approximately 180–250° (Figs. 667, 672). Spermathecae of female deeply grooved over entire surface (Figs. 670, 673) 39

Embolus of male originating on tegulum at approximately 270–360° (Figs. 677, 685). Spermathecae of female lacking grooves mesad and anteriad (Figs. 680, 689) 40

39(38). Tegular ridge of male situated at 90–100° on tegulum (Fig. 667). Median septum of female extending only slightly outside atrium (Fig. 668) ..... ***punctatus*** **Keyserling,** p. 220

Tegular ridge (*tr*) of male situated at 200–225° on tegulum (Fig. 672). Median septum extending well outside atrium (Fig. 675) ..... ***montanensis*** **Keyserling,** p. 222

40(38). Carapace uniformly black or red black. Abdomen pale gray. Space between anterior lateral and posterior lateral eyes of each side swollen ..... ***alboniger*** **Turnbull et al.,** p. 223

Carapace not uniformly black or red black. Abdomen not pale gray. Space between anterior lateral and posterior lateral eyes of each side not swollen 41

41(40). Tegular ridge of male spurlike; pars pendula (*pp*) short (Fig. 681). Atrium of female small, strongly narrowed toward anterior end (Fig. 683) ..... ***benefactor*** **Keyserling,** p. 225

Tegular ridge of male not spurlike; pars pendula long. Atrium of female large, not strongly narrowed toward anterior end 42

42(41). Tibia of leg I with three prolateral and three retrolateral macrosetae in males, and with four pairs of ventral macrosetae in females. Tegular ridge of male cusplike (Fig. 685). Median septum of epigynum not extending outside atrium (Fig. 688) ..... ***luctuosus*** **(Blackwall),** p. 227

Tibia of leg I in male without prolateral or retrolateral macrosetae in males, and with three pairs of ventral macrosetae in females. Tegular ridge of male not cusplike (Fig. 690). Median septum of epigynum extending outside atrium (Fig. 691) ..... ***ellipticus*** **Turnbull et al.,** p. 228

43(37). Male 44

Female 47

44(43). Tibia of palpus with three distinct apophyses (Figs. 696, 700) 45

Tibia of palpus with two apophyses (Figs. 704, 710) 46

45(44). Tegular ridge hollowed (Figs. 694, 696) ..... ***durus*** **(Soerensen),** p. 230

Tegular ridge not hollowed (Figs. 698, 700) ..... ***nigromaculatus*** **Keyserling,** p. 231

46(44). Embolus very slender, not sinuous (Fig. 702). Carapace length more than 2.50 mm and width more than 2.35 mm. Tibia I with prolateral and retrolateral macrosetae ..... ***triangulosus*** **Emerton,** p. 232

Embolus thick, sinuous (Fig. 709). Carapace length less than 2.50 mm and width less than 2.35 mm. Tibia I without prolateral or retrolateral macrosetae ..... ***winnipegensis*** **Turnbull et al.,** p. 235

47(43). Median septum of epigynum crescent-shaped (Fig. 703). Carapace with simple setae ..... ***triangulosus*** **Emerton,** p. 232

Median septum of epigynum not crescent-shaped (Figs. 697, 701, 707). Carapace with untapered, sometimes clavate, setae 48

48(47). Median septum of epigynum bulbous (Fig. 697) ..... ***durus*** **(Soerensen),** p. 230

Median septum of epigynum not bulbous 49

49(48). Median septum of epigynum essentially parallel-sided, without cavity in posterior margin (Fig. 701) ..... ***nigromaculatus*** **Keyserling,** p. 231

Median septum of epigynum not parallel-sided, with cavity in posterior margin (Fig. 707) ..... ***leechi*** **Turnbull et al.,** p. 234

50(36). Embolus of male angular at base; pars pendula short (Fig. 711). Spermathecae of female finely rugose (Fig. 712) ..... ***rugosus*** **Buckle & Redner,** p. 236

Embolus of male not angular at base; pars pendula long (Figs. 715, 721). Spermathecae of female deeply grooved (Figs. 719, 724) 51

51(50). Embolus of male slender (Figs. 715, 717). Copulatory tubes of female usually partly visible laterad of spermathecae (Figs. 718–720). Species low arctic and alpine in range (Map 66) ..... ***labradorensis*** **Keyserling,** p. 237

Embolus of male stout (Figs. 721, 723). Copulatory tubes of female not visible laterad of spermathecae (Figs. 724, 725). Species high arid arctic in range (Map 66) ..... ***deichmanni*** **Soerensen,** p. 239

Xysticus gulosus Keyserling

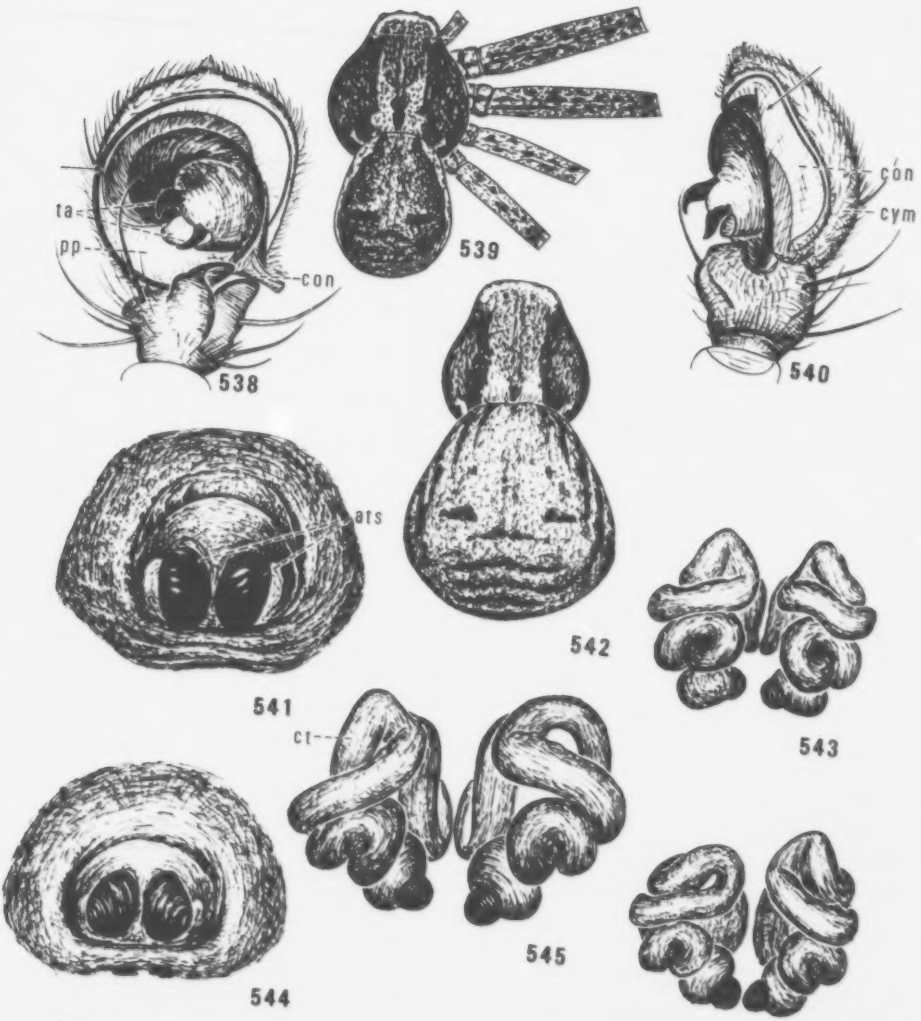
Figs. 538–546; Map 42

Xysticus gulosus Keyserling, 1880:43, fig. 21 (pl. 1); Gertsch 1939:353, figs. 140, 141, 165; Turnbull et al. 1965:1238, figs. 6, 9, 87, 88, 91, 167.
Xysticus lentus Banks, 1892:55, fig. 67 (pl. 2).

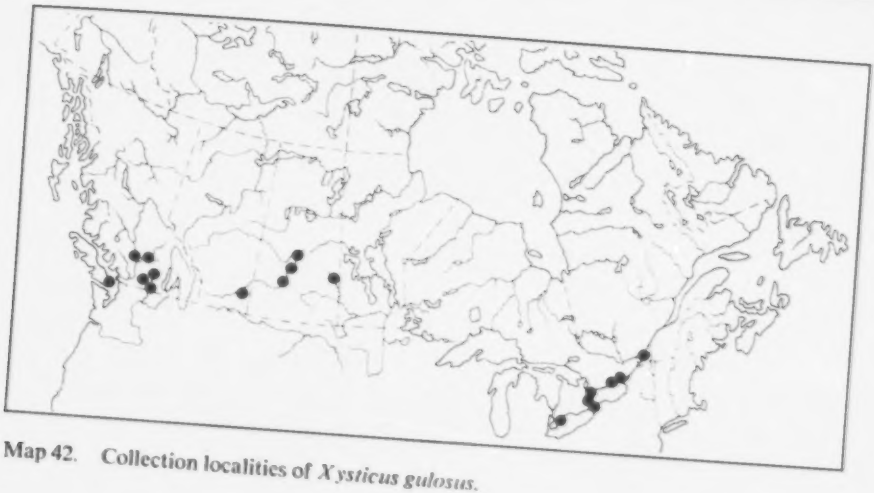
Male. Total length approximately 3.75 mm; carapace 2.06 ± 0.16 mm long, 2.05 ± 0.16 mm wide (14 specimens measured). Carapace gray brown, fleckled with white; pale median area enclosing a mottled gray area anterior to dorsal groove. Legs gray to brown, speckled with white. Dorsum of abdomen gray with few pairs of black spots, and with some white speckles (Fig. 539). Palpal tibia with broad truncate retrolateral and ventral apophyses (Figs. 538, 540); cymbium conspicuously expanded at retrolaterodistal margin (Fig. 538); conductor long (Fig. 540). Embolus long, slender, arising basally on tegulum, with pars pendula terminating at approximately 290° on bulb (Fig. 538); tegulum with two hooked apophyses near center, and with the distal apophysis located prolaterodistad of the basal one (Fig. 538).

Female. Total length approximately 5.00 mm; carapace 3.11 ± 0.19 mm long, 3.05 ± 0.18 mm wide (16 specimens measured). General structure and color essentially as in male, but carapace and dorsum of abdomen each with several long flattened setae (Fig. 542). Epigynum with deep atrium containing pair of large usually ovoid sclerites (Figs. 541, 544). Copulatory tube with anterior loop usually angulate; spermathecae convoluted (Figs. 543, 545, 546).

Range. California and northern Mexico to Georgia, northward to British Columbia and Quebec.



Figs. 538–546. Structures of *Xysticus gulosus*. 538, Palpus of male, ventral view; 539, Body of male, dorsal view; 540, Palpus of male, retrolateral view; 541 and 544, Epigynum; 542, Body of female, dorsal view; 543, 545, and 546, Spermathecae. *ats*, atrial sclerites; *con*, conductor; *ct*, copulatory tube; *cym*, cymbium; *pp*, pars pendula; *ta*, tegular apophyses.



Map 42. Collection localities of *Xysticus gulosus*.

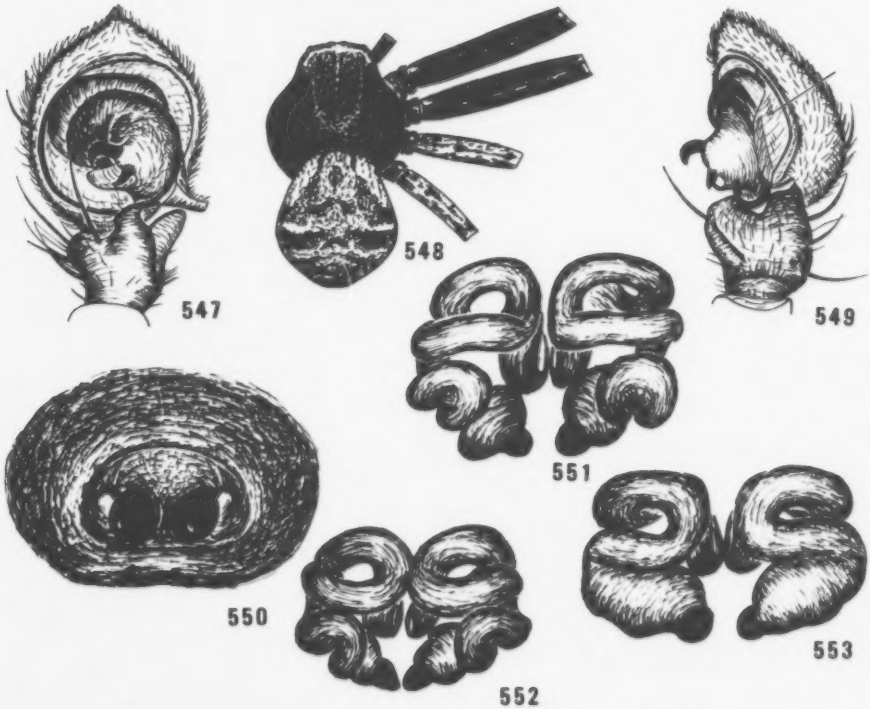
Comments. Males of *X. gulosus* closely resemble those of *X. pellax*, but usually differ by being predominantly gray rather than red brown. In addition, the cymbium is conspicuously swollen along the retrolaterodistal margin, and the conductor is long. In females the atrial sclerites of the epigynum are usually ovoid rather than round, and the anterior loop of the copulatory tube is angulate. Specimens have been collected by pitfall traps in fields and meadows, and by hand on shrubs, tree trunks, and buildings.

Xysticus pellax O. Pickard-Cambridge

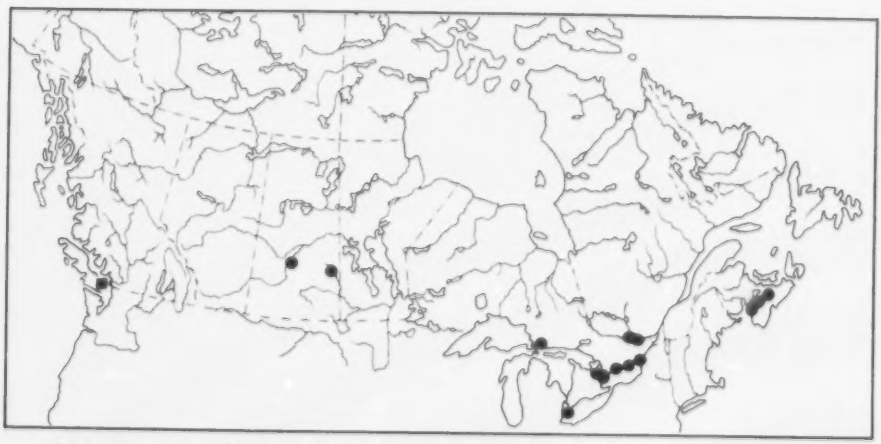
Figs. 547–553; Map 43

Xysticus pellax O. Pickard-Cambridge, 1894:138, fig. 14 (pl. 17); Turnbull et al. 1965:1237, figs. 7, 10, 86, 89, 92.
Xysticus fissilis Banks, 1898*a*:258, fig. 5 (pl. 16).
Xysticus ontariensis Emerton, 1919:108, figs. 16*a*, 16*b*.

Male. Total length approximately 3.50 mm; carapace 1.90 ± 0.11 mm long, 1.90 ± 0.11 mm wide (23 specimens measured). Carapace dark red brown, with indistinct white V, and with diffuse dark area anterior to dorsal groove. Legs gray to brown; legs I and II darker basad than legs III and IV. Dorsum of abdomen with large brown spots separated by white lines (Fig. 548). Palpal tibia with broad truncate retrolateral and ventral apophyses (Figs. 547, 549); cymbium not conspicuously swollen along retrolaterodistal margin; conductor short (Fig. 549). Embolus long, slender, arising basally on tegulum, with pars pendula terminating at approximately 270° on bulb (Fig. 547); tegulum with two hooklike apophyses near center, and with the distal apophysis located prolaterodistad of the basal one (Fig. 547).



Figs. 547–553. Structures of *Xysticus pellax*. 547, Palpus of male, ventral view; 548, Body of male, dorsal view; 549, Palpus of male, retrolateral view; 550, Epigynum; 551–553, Spermathecae.



Map 43. Collection localities of *Xysticus pellax* (●) and *X. gosiutus* (■).

Female. Total length approximately 6.25 mm; carapace 2.79–3.26 mm long, 2.60–2.88 mm wide (six specimens measured). General structure and color essentially as in male, but carapace and legs gray brown, flecked with white, and dorsum of abdomen gray with few pairs of black spots. Epigynum with deep atrium containing pair of large usually round sclerites (Fig. 550). Copulatory tubes usually curved around anterior end of spermathecae; spermathecae convoluted (Figs. 551–553).

Range. Northern Mexico to Maryland, northward to Idaho, Saskatchewan, and Nova Scotia.

Comments. Males of *X. pellax* closely resemble those of *X. gulosus*, but are usually predominantly red brown rather than gray. The cymbium of the palpus lacks a conspicuous swelling along the retrolaterodistal margin, and the conductor is shorter. In the female, the atrial sclerites are usually round, and the copulatory tubes are smoothly rounded anterior to the spermathecae. Specimens have been collected by pitfall traps in fields and meadows.

Xysticus pretiosus Gertsch

Figs. 554–557; Map 45

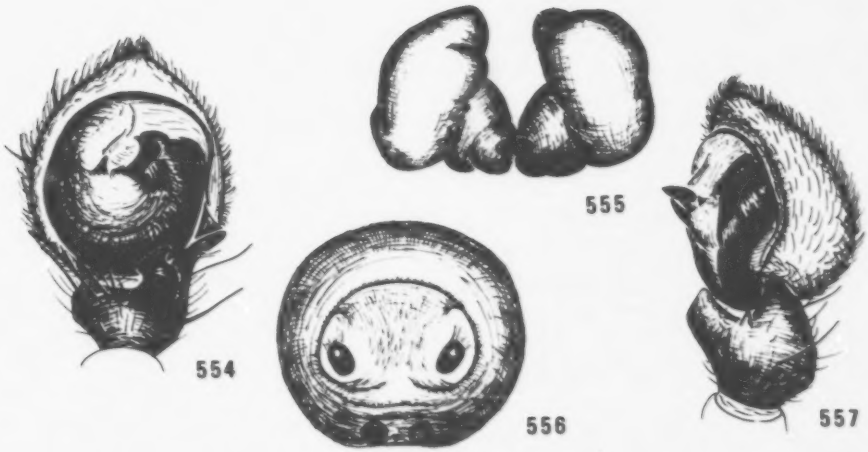
Xysticus pretiosus Gertsch, 1934:6, fig. 3; Turnbull et al. 1965:1246, figs. 32, 35, 114, 117.

Male. Total length approximately 3.25 mm; carapace 2.54–2.68 mm long, 2.35–2.49 mm wide (four specimens measured). Carapace dark brown, with pale median area enclosing pale V, and with brown area anterior to dorsal groove. Legs mottled dark brown and yellow. Dorsum of abdomen with pairs of dark spots separated by pale band along midline, and with some pale transverse bands. Palpal tibia with blunt retrolateral and ventral apophyses, and with minute intermediate apophysis (Figs. 554, 557). Embolus slender, arising at distal end of tegulum, with pars pendula extending nearly to tip (Fig. 554). Tegulum with two apophyses that are oriented transversely near center (Fig. 554).

Female. Total length approximately 4.75 mm; carapace 2.50–2.80 mm long, 2.30–2.80 mm wide (five specimens measured). General structure and color essentially as in male, but paler. Epigynum with atrium containing pair of small well-separated sclerites (Fig.556). Spermathecae plump, folded once upon themselves (Fig. 555).

Range. California to British Columbia.

Comments. The transversely oriented tegular apophyses of the male palpus, and the small widely separated atrial sclerites and plump spermathecae of the female, distinguish specimens of *X. pretiosus* from those of other species. The copulatory tubes are not visible in dorsal view. Specimens have been collected by sweep nets from weeds and various cultivated plants.



Figs. 554–557. Genitalia of *Xysticus pretiosus*. 554, Palpus of male, ventral view; 555, Spermathecae; 556, Epigynum; 557, Palpus of male, retrolateral view.

Xysticus locuples Keyserling

Figs. 558–564; Map 48

Xysticus locuples Keyserling, 1880:24, fig. 9 (pl. 1); Turnbull et al. 1965:1245, figs. 30, 33, 112, 115, 168.

Xysticus malkini Gertsch, 1953:423, figs. 8, 9.

Male. Total length approximately 4.50 mm; carapace 2.22–3.48 mm long, 2.07–3.27 mm wide (five specimens measured). Carapace dull red brown, with pale median area enclosing pale V, and with mottled area anterior to dorsal groove. Legs mottled red brown and off-white. Dorsum of abdomen with pairs of brown areas separated by off-white median and transverse lines. Palpal tibia with broad narrowly separated retrolateral and ventral apophyses (Figs. 558, 560); cymbium conspicuously swollen along prolateroditstal margin; tip of conductor fingerlike (Fig. 558). Embolus long, slender, with pars pendula extending nearly to midline (Fig. 558); tegulum with two hooklike apophyses near center and oriented along midline (Fig. 558).

Figs. 558–568. Structures of *Xysticus* spp. 558–564, *X. locuples*. 558, Palpus of male, ventral view; 559, Body of female, dorsal view; 560, Palpus of male, retrolateral view; 561 and 563, Epigynum; 562 and 564, Spermathecae. 565–568, *X. gosiutus*. 565, Palpus of male, ventral view; 566, Spermathecae; 567, Epigynum; 568, Palpus of male, retrolateral view.

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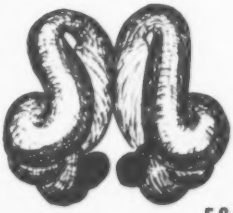

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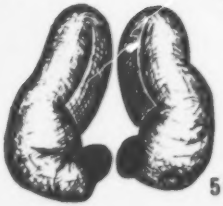

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Female. Total length approximately 6.50 mm; carapace 3.29 ± 0.50 mm long, 3.12 ± 0.55 mm wide (16 specimens measured). General structure and color essentially as in male, but paler (Fig. 559). Epigynum with atrium containing flattened median septum; lateral margins of median septum thick, dark (Figs. 561, 563). Copulatory tubes long, forming open loops; spermathecae slender (Figs. 562, 564).

Range. Northern Mexico to southern British Columbia, inland to Colorado.

Comments. The male of *X. locuples* resembles that of *X. gosiutus*, but differs by having a palpal cymbium conspicuously swollen along the prolaterodistal margin and a fingerlike conductor tip. The female of *locuples* differs from that of *gosiutus* by having a flattened epigynal septum with thickened margins and more broadly looped copulatory tubes. The habitat of *locuples* is not recorded.

Xysticus gosiutus Gertsch

Figs. 565–568; Map 43

Xysticus gosiutus Gertsch, 1933*a*:20, figs. 17, 21; Turnbull et al. 1965: 1245, figs. 26, 29, 108, 111.

Male. Total length approximately 4.80 mm; carapace approximately 3.03 mm long, 2.98 mm wide (one specimen measured). Carapace red brown, with pale V, and with dark mottled area anterior to dorsal groove. Legs mottled red brown and off-white. Dorsum of abdomen with pairs of brown areas separated by off-white median and transverse lines. Palpal tibia with blunt narrowly separated retrolateral and ventral apophyses (Figs. 565, 568); cymbium not conspicuously swollen along prolaterodistal margin; tip of conductor short, pointed (Fig. 565). Embolus long, slender, with pars pendula extending to midline; tegulum with two hooklike apophyses near center and oriented along midline (Fig. 565).

Female. Total length approximately 5.40 mm; carapace approximately 2.14 mm long, 2.10 mm wide (one specimen measured). General structure and color essentially as in male, but paler. Epigynum with atrium containing pair of elongate sinuous sclerites (Fig. 567). Copulatory tubes folded upon themselves; spermathecae slender (Fig. 566).

Range. California to southern British Columbia, inland to Utah.

Comments. The male of *X. gosiutus* mainly resembles that of *X. locuples*, but lacks a conspicuous swelling along the prolaterodistal margin of the palpal cymbium, and the conductor tip is much shorter. The female differs from that of *locuples* by having elongate sinuous atrial sclerites and more narrowly looped copulatory tubes. The habitat of *gosiutus* is unrecorded.

Xysticus posti Sauer

Figs. 569, 570; Map 44

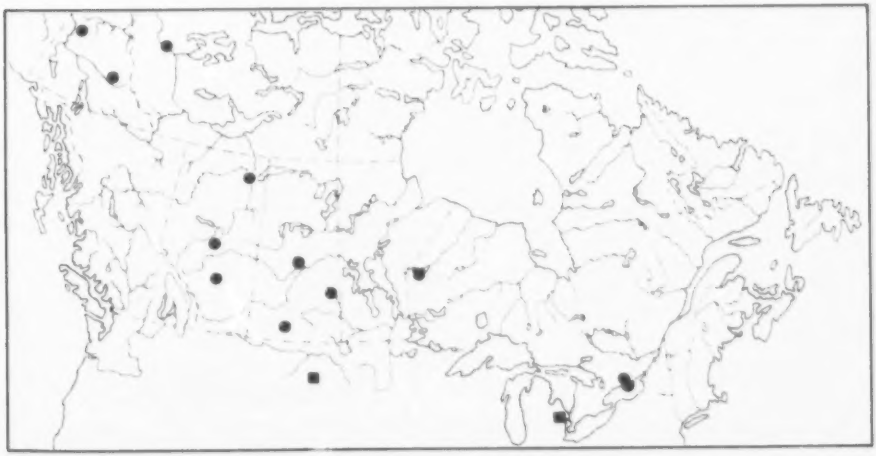
Xysticus posti Sauer, 1968:1149, figs. 5, 6.

Male. Unknown.

Female. Total length approximately 5.25 mm; carapace 2.20–2.50 mm long, 2.00–2.26 mm wide (two specimens measured). Carapace mottled dark brown and orange brown, with pale median area enclosing mottled area anterior to dorsal groove. Legs pale yellow, sparsely spotted with dark brown. Dorsum of abdomen gray brown, with pairs of gray areas separated by off-white lines. Epigynum with low broad median septum having convex lateral margins (Fig. 569). Copulatory tubes short; spermathecae crescent-shaped, with several surface grooves (Fig. 570).

Range. North Dakota and Michigan.

Comments. The male is unknown. The female resembles that of *X. auctificus*, but differs by having crescent-shaped spermathecae. One of the two available specimens was taken in a pitfall trap on a treed river bank, the other from the mouth of a bluebird.



Map 44. Collection localities of *Xysticus posti* (■) and *X. chippewa* (●).

Xysticus auctificus Keyserling

Figs. 571–574; Map 45

Xysticus auctificus Keyserling, 1880:25, fig. 10 (pl. 1); Turnbull et al. 1965:1246, figs. 31, 34, 113, 116.

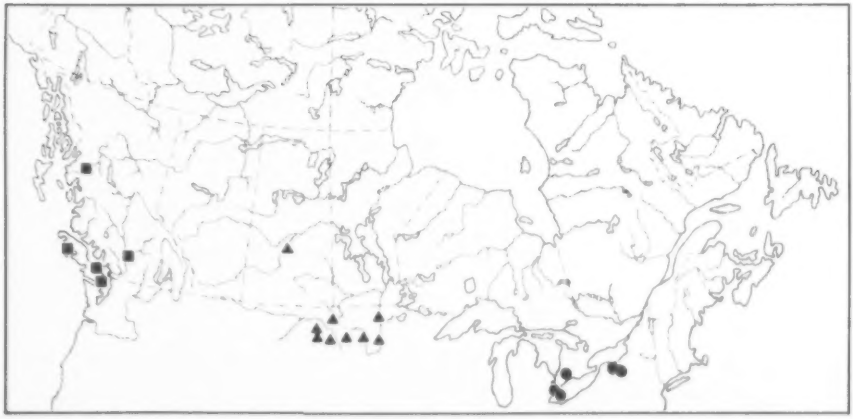
Xysticus maculatus Keyserling, 1880:45, fig. 22 (pl. 1).

Xysticus trimaculatus Bryant, 1933:179, figs. 12, 13 (pl. 2).

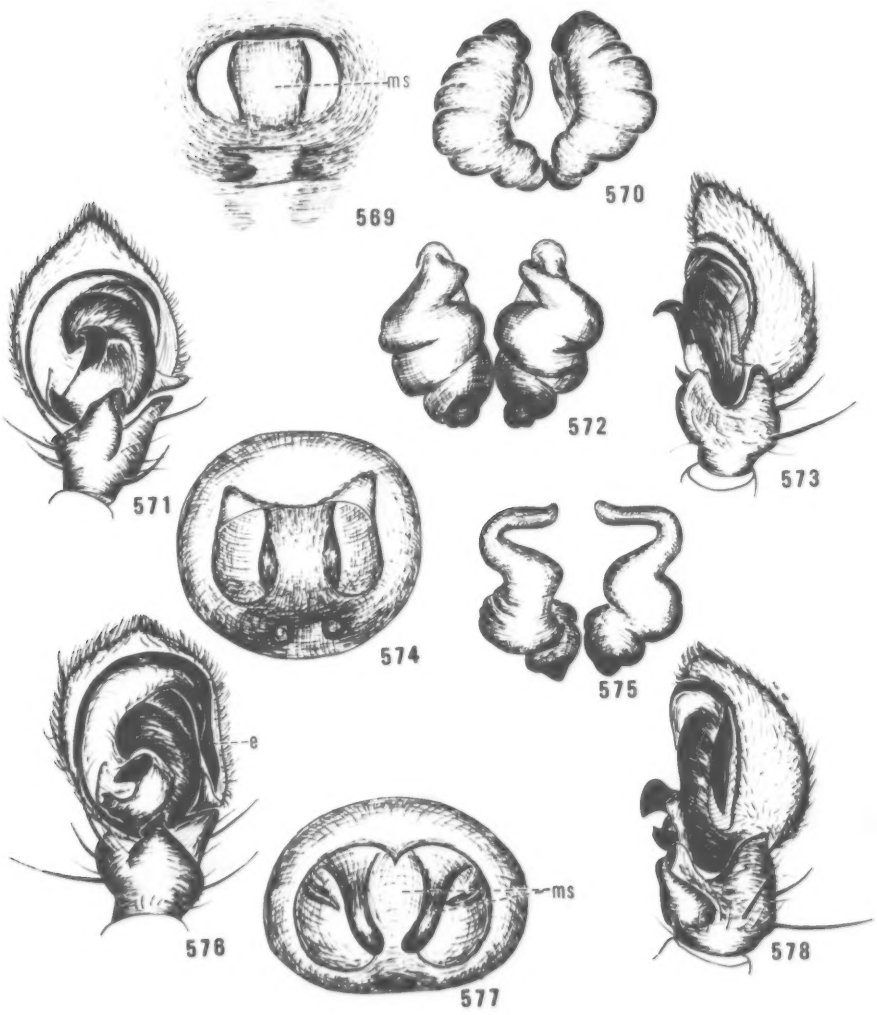
Male. Total length approximately 3.50 mm; carapace 2.39 ± 0.13 mm long, 2.29 ± 0.12 mm wide (14 specimens measured). Carapace red brown to orange, finely veined with black, with thin white V, and with dull red area anterior to dorsal groove that is flanked by pair of black spots. Legs red brown, minutely speckled at bases; tibiae and basitarsi of some specimens dark. Dorsum of abdomen with pairs of brown areas separated by off-white median and transverse lines. Palpal tibia with large blunt well-separated retrolateral and ventral apophyses (Figs. 571, 573); tip of conductor finger-like. Embolus long, slender, with pars pendula extending nearly to tip (Fig. 571); tegulum with two large hooked apophyses in basal half, and with the distal apophysis lying against tegulum (Figs. 571, 573).

Female. Total length approximately 5.50 mm; carapace 2.39 ± 0.13 mm long, 2.29 ± 0.12 mm wide (14 specimens measured). General structure and color essentially as in male, but paler. Epigynum with broad parallel-sided median septum (Fig. 574). Copulatory tubes long, extending posteriad; spermathecae thickened, with few transverse surface grooves (Fig. 572).

Range. Mexico to Georgia, northward to Central United States and Saskatchewan.



Map 45. Collection localities of *Xysticus pretiosus* (■), *X. auctificus* (▲), and *X. funestus* (●).



Figs. 569–578. Genitalia of *Xysticus* spp. 569 and 570, *X. posti*. 569, Epigynum; 570, Spermathecae. 571–574, *X. auctificus*. 571, Palpus of male, ventral view; 572, Spermathecae; 573, Palpus of male, retrolateral view; 574, Epigynum. 575–578, *X. triguttatus*. 575, Spermathecae; 576, Palpus of male, ventral view; 577, Epigynum; 578, Palpus of male, retrolateral view. *e*, embolus; *ms*, median septum.

Comments. Specimens of *X. auctificus* are distinguished by the recumbent distal apophysis of the male tegulum and by the parallel lateral margins of the epigynal septum of the female. Collections have been made by pitfall traps, sweep nets, and vacuum collectors in field margins.

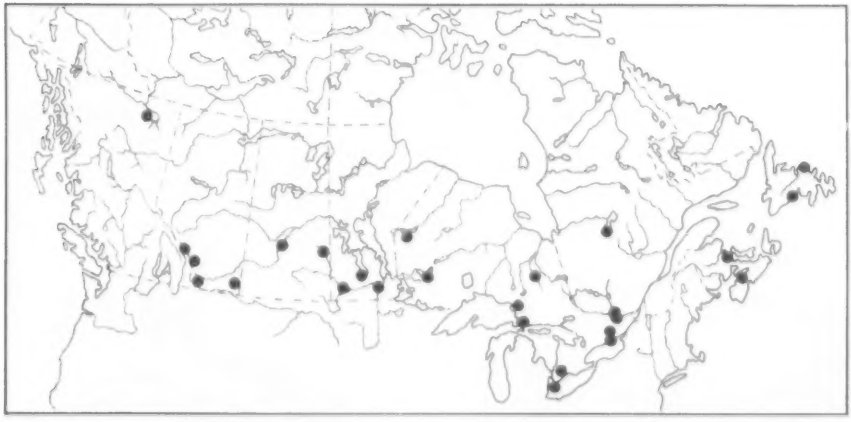
Xysticus triguttatus Keyserling

Figs. 575–578; Map 46

Xysticus triguttatus Keyserling, 1880:12, figs. 3, 6 (pl. 1); Turnbull et al. 1965:1243, figs. 20, 23, 102, 105.
Xysticus feroculus Keyserling, 1882:305, fig. 24 (pl. 11).

Male. Total length approximately 3.25 mm; carapace 2.05 ± 0.18 mm long, 1.96 ± 0.16 mm wide (16 specimens measured). Carapace dark red brown, with white V and dark area anterior to dorsal groove; posterior declivity with pair of dark spots. Legs brown or yellow, flecked with dark brown. Dorsum of abdomen with pairs of brown areas separated by off-white lines. Palpal tibia with broad blunt retrolateral and ventral apophyses (Figs. 576, 578). Embolus long, with tip flattened and directed basad (Fig. 576); tegulum with two hooked apophyses in basal half, and with the distal apophysis broad and thickened at middle (Figs. 576, 578).

Female. Total length approximately 4.00 mm; carapace 2.13 ± 0.16 mm long, 2.03 ± 0.15 mm wide (14 specimens measured). General structure and color essentially as in male, but paler. Epigynum with pair of arched elongate sclerites, without pair of cavities anterior to atrium (Fig. 577). Copulatory tubes slender, not bent posteriad; spermathecae bulbous, with few surface grooves (Fig. 575).



Map 46. Collection localities of *Xysticus triguttatus*.

Range. Eastern British Columbia to Newfoundland, southward to Colorado, Kansas, and Florida.

Comments. The distinctively flattened distal part of the male embolus, and the slender short copulatory tubes and lack of atrial extensions in the epigynum of the female, distinguish specimens of *X. triguttatus* from those of similar species such as *X. chippewa*, *X. discursans*, and *X. fervidus*. Collections of *triguttatus* have been made by pitfall traps in grassland and by sweep nets in herbs and shrubs.

Xysticus chippewa Gertsch

Figs. 579–584; Map 44

Xysticus chippewa Gertsch, 1953:430, figs. 17–20; Turnbull et al. 1965: 1242, figs. 14, 17, 96, 99, 170; Vilbaste 1969:61, figs. 51, 52.

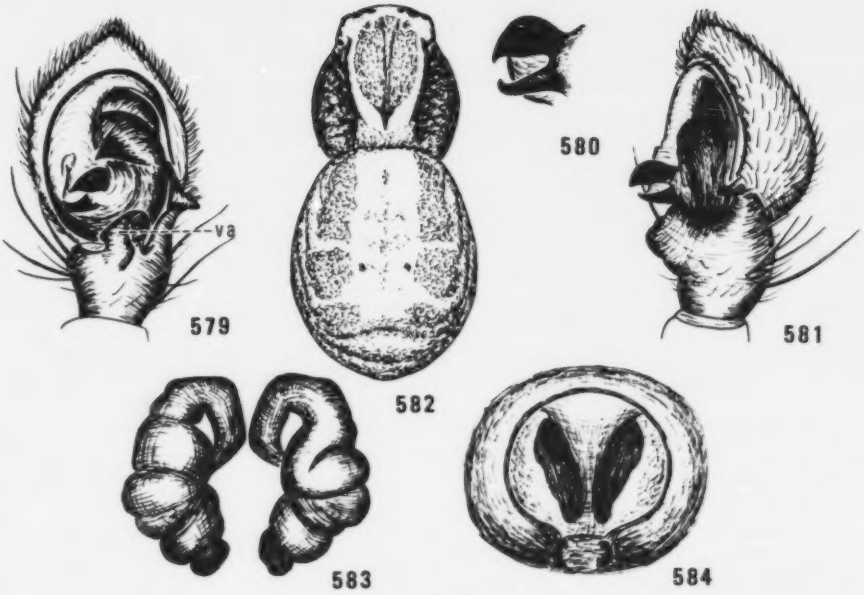
Male. Total length approximately 4.00 mm; carapace 2.08 ± 0.13 mm long, 1.95 ± 0.13 mm wide (10 specimens measured). Carapace dark brown, mottled with yellow; pale median area enclosing dark midstripe; dark lateral areas partly divided by pale longitudinal band. Legs brown. Dorsum of abdomen with pairs of brown areas separated by broad off-white serrated band. Palpal tibia with broad blunt retrolateral apophysis, and with more slender ventral apophysis (Figs. 579, 581). Embolus long, slender, with pars pendula extending nearly to tip (Fig. 579); tegulum with two apophyses in basal half, and with the distal apophysis having an undulating basal margin (Figs. 579–581).

Female. Total length approximately 6.00 mm; carapace 2.56 ± 0.20 mm long, 2.40 ± 0.19 mm wide (17 specimens measured). General structure and color essentially as in male, but paler (Fig. 582). Epigynum with pair of elongate nearly straight posteriorly converging sclerites, without anterior extensions of atrium (Fig. 584). Copulatory tubes short, extending posteriad; spermathecae swollen, with several transverse surface grooves (Fig. 583).

Range. Yukon Territory to eastern Ontario, southward to North Dakota and Michigan; Europe.

Comments. Specimens of *X. chippewa* generally resemble those of *X. triguttatus*, *X. discursans*, and *X. fervidus*. Males lack the flattened embolus of male *triguttatus*; the ventral apophysis on the palpal tibia is slender rather than swollen, and the distal tegular apophysis has an undulating margin. The posteriorly converging and nearly straight atrial sclerites distinguish females of *chippewa* from those of the other species. Collections of *chippewa* have been made by sweep nets in forest herbs.

(Figs. 579–584 overleaf)



Figs. 579–584. Structures of *Xysticus chippewa*. 579, Palpus of male, ventral view; 580, Tegular apophyses of male, retrolateral view; 581, Palpus of male, retrolateral view; 582, Body of female, dorsal view; 583, Spermathecae; 584, Epigynum. *va*, ventral apophysis.

Xysticus discursans Keyserling

Figs. 585–588; Map 47

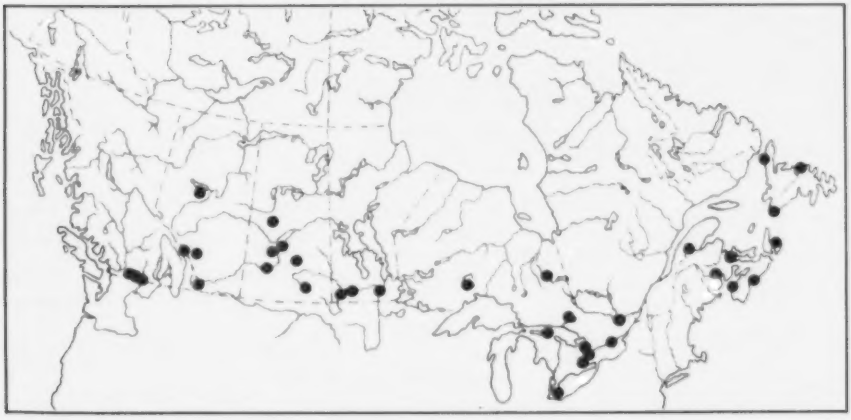
Xysticus discursans Keyserling, 1880:20, fig. 7 (pl. 1); Turnbull et al. 1965:1242, figs. 18, 21, 100, 103.

Xysticus vernalis Bryant, 1930*a*:139, figs. 13, 15.

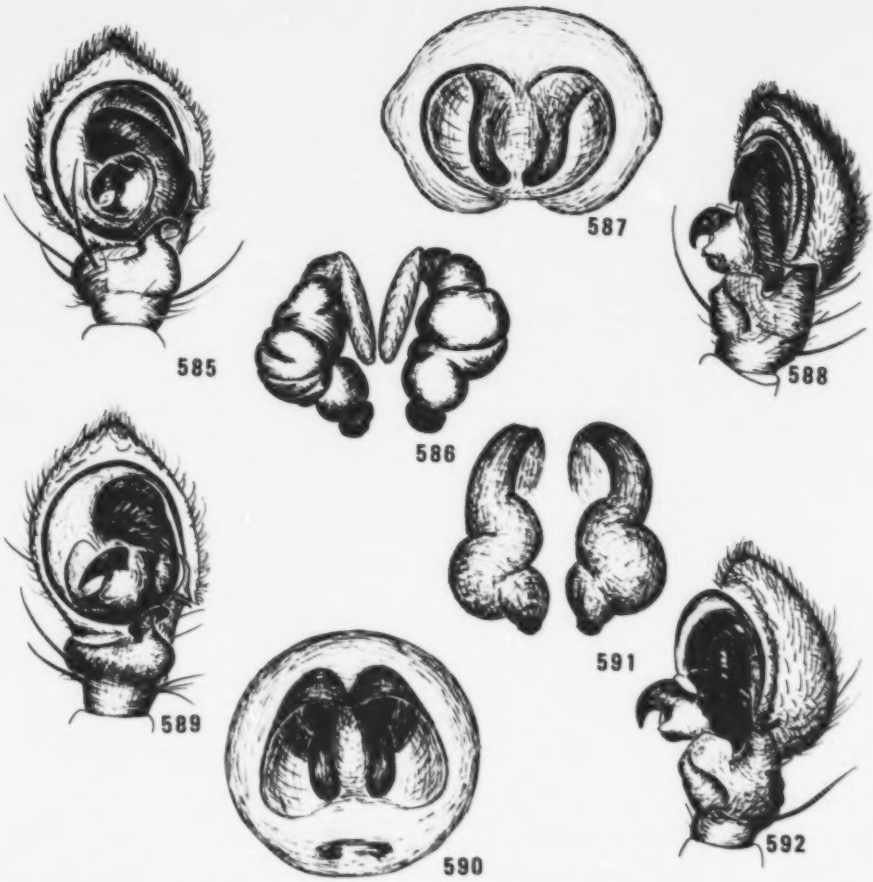
Male. Total length approximately 3.80 mm; carapace 2.03 ± 0.22 mm long, 2.01 ± 0.23 mm wide (20 specimens measured). Carapace brown to black, mottled with yellow; pale median area enclosing white V and mottled area anterior to dorsal groove; dark lateral areas indented posteriad; posterior declivity with pair of black spots. Legs brown and off-white, speckled with dark brown. Dorsum of abdomen with pairs of brown to black areas separated by off-white lines. Palpal tibia with blunt retrolateral apophysis, and with expanded ventral apophysis (Figs. 585, 588). Embolus long, slender, with pars pendula extending nearly to tip (Fig. 585); tegulum with two apophyses, and with the distal apophysis short and broad (length and width approximately equal (Fig. 585)).

Female. Total length approximately 4.80 mm; carapace 2.41 ± 0.17 mm long, 2.39 ± 0.18 mm wide (20 specimens measured). General structure and color essentially as in male, but paler. Epigynum with paired sclerites arched laterad, and with atrium lacking anterior extensions (Fig. 587). Copulatory tubes moderately long, straight, extending posteromesad; spermathecae with several transverse grooves (Fig. 586).

Range. Southern British Columbia to Newfoundland, southward to Baja California, Mexico, and Florida.



Map 47. Collection localities of *Xysticus discursans*.



Figs. 585–592. Genitalia of *Xysticus* spp. 585–588, *X. discursans*. 585, Palpus of male, ventral view; 586, Spermathecae; 587, Epigynum; 588, Palpus of male, retrolateral view. 589–592, *X. fervidus*. 589, Palpus of male, ventral view; 590, Epigynum; 591, Spermathecae; 592, Palpus of male, retrolateral view.

Comments. Specimens of *X. discursans* mainly resemble those of *X. triguttatus*, *X. chippewa*, and *X. fervidus*. Males differ by having a short broad distal apophysis on the palpal tegulum. Females have the atrial sclerites arched laterad as in females of *triguttatus* and *fervidus*, but the copulatory tubes are straight, moderately long, and extend posteromesad, and the atrium lacks anterior extensions. Collections of *discursans* have been made by pitfall traps and sweep nets in both grassland and wooded areas.

Xysticus fervidus Gertsch

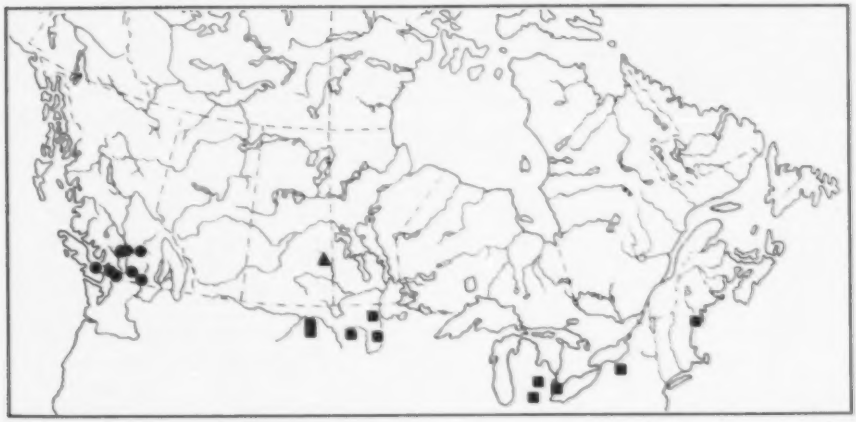
Figs. 589–592; Map 48

Xysticus fervidus Gertsch, 1953:427, figs. 27–30; Turnbull et al. 1965: 1243, figs. 19, 22, 101, 104.

Male. Total length approximately 4.00 mm; carapace approximately 1.86 mm long, 1.86 mm wide (one specimen measured). Carapace dark brown, mottled with yellow; pale median area enclosing off-white V and mottled area anterior to dorsal groove; posterior declivity with pair of dark brown spots. Legs brown and off-white, speckled with dark brown. Dorsum of abdomen with pairs of dark brown areas separated by off-white or pale brown lines. Palpal tibia with blunt retrolateral apophysis, and with expanded ventral apophysis (Figs. 589, 592). Embolus long, slender, not flattened, with pars pendula extending nearly to tip (Fig. 589); tegulum with two apophyses, and with the distal apophysis having small "heel" and long sharp point (Fig. 589).

Female. Total length approximately 5.00 mm; carapace approximately 2.58 mm long, 2.40 mm wide (one specimen measured). General structure and color essentially as in male. Epigynum with atrial sclerites arched laterad, and with distinct anterior extensions on atrium (Fig. 590). Copulatory tubes short, indistinct, extending short distance posteriad; spermathecae smooth, with few surface grooves (Fig. 591).

Range. Colorado to southern Saskatchewan.



Map 48. Collection localities of *Xysticus locuples* (●), *X. fervidus* (▲), and *X. bicuspis* (■).

Comments. Specimens of *X. fervidus* mainly resemble those of *X. triguttatus*, *X. chippewa*, and *X. discursans*. Males of *fervidus* differ by the combination of slender embolus, expanded ventral tibial apophysis, and relatively slender pointed distal tegular apophysis. Females differ by having distinct anterior extensions of the epigynal atrium and short indistinct copulatory tubes. The habitat of *fervidus* is unrecorded.

Xysticus bicuspis Keyserling

Figs. 593–596; Map 48

Xysticus bicuspis Keyserling, 1887:478, fig. 38 (pl. 6); Turnbull et al. 1965:1240, figs. 8, 11, 90, 93.

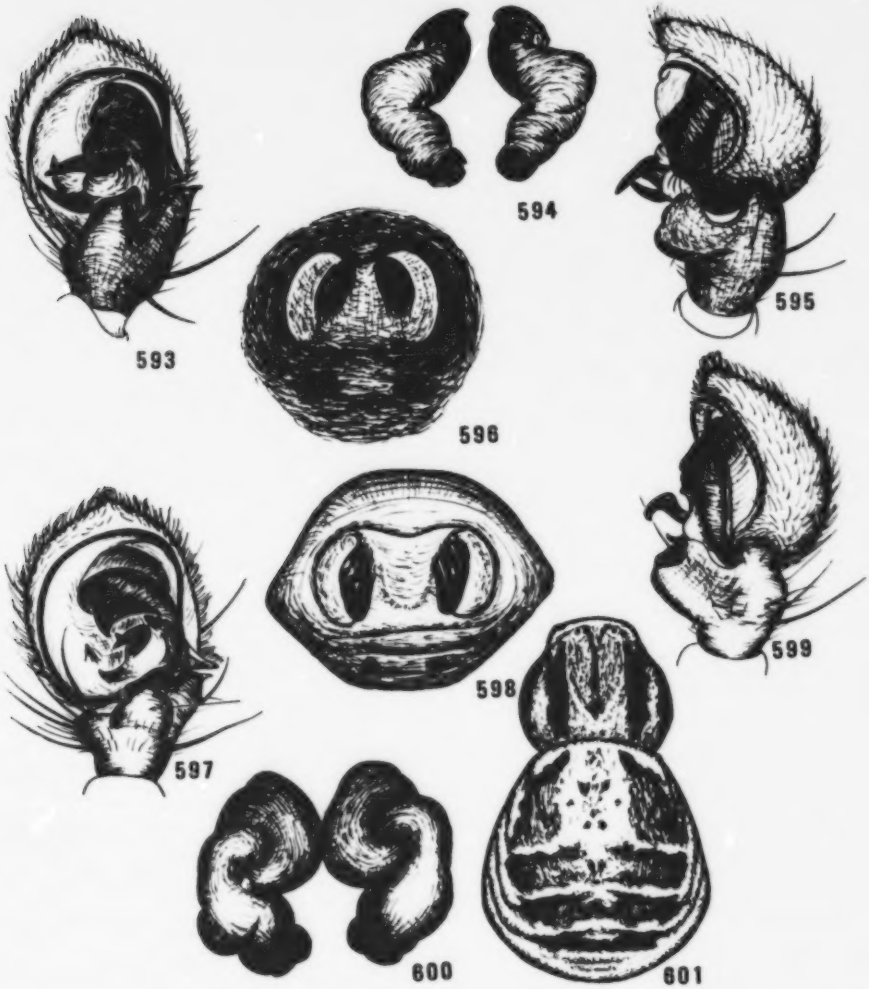
Xysticus graminis Emerton, 1892:364, fig. 2 (pl. 24).

Male. Total length approximately 4.00 mm; carapace 2.60–2.68 mm long, 2.65–2.72 mm wide (three specimens measured). Carapace dark red brown; pale median area enclosing much red brown pigment anterior to dorsal groove; each dark lateral area indistinctly divided by pale longitudinal band. Legs mottled red brown and off-white. Dorsum of abdomen with paired red brown areas separated by off-white lines. Palpal tibia with stout retrolateral and ventral apophyses (Figs. 593, 595). Embolus sinuous, thickened distally, with pars pendula extending nearly to tip (Fig. 593); tegulum with two large apophyses, with the distal apophysis oriented transversely, and with large "heel" (Fig. 593).

Female. Total length approximately 4.80 mm; carapace 3.05–3.15 mm long, 3.00–3.18 mm wide (two specimens measured). General structure and color essentially as in male, but paler. Epigynum with atrial sclerites approximately kidney-shaped occupying distinctly less than full length of atrium (Fig. 596). Copulatory tubes scarcely visible; spermathecae smooth, angled at about midlength (Fig. 594).

Range. Montana, southern Ontario, and Maine, southward to Colorado, Missouri, and Maryland.

Comments: Specimens of *X. bicuspis* mainly resemble those of *X. ampullatus* and *X. acquiescens*. Males of *bicuspis* differ by the large, "heeled," and transverse distal apophysis on the palpal tegulum, which is approximately as long as the basal one. Females differ by having shorter atrial sclerites; they also lack the prominent copulatory tubes found in female *ampullatus* and the concavity between the sclerites in female *acquiescens*. Specimens have been collected by sweep nets and pitfall traps in wooded areas.



Figs. 593–601. Structures of *Xysticus* spp. 593–596, *X. bicuspis*. 593, Palpus of male, ventral view; 594, Spermathecae; 595, Palpus of male, retrolateral view; 596, Epigynum. 597–601, *X. ampullatus*. 597, Palpus of male, ventral view; 598, Epigynum; 599, Palpus of male, retrolateral view; 600, Spermathecae; 601, Body of female, dorsal view.

Xysticus ampullatus Turnbull et al.

Figs. 597–601; Map 49

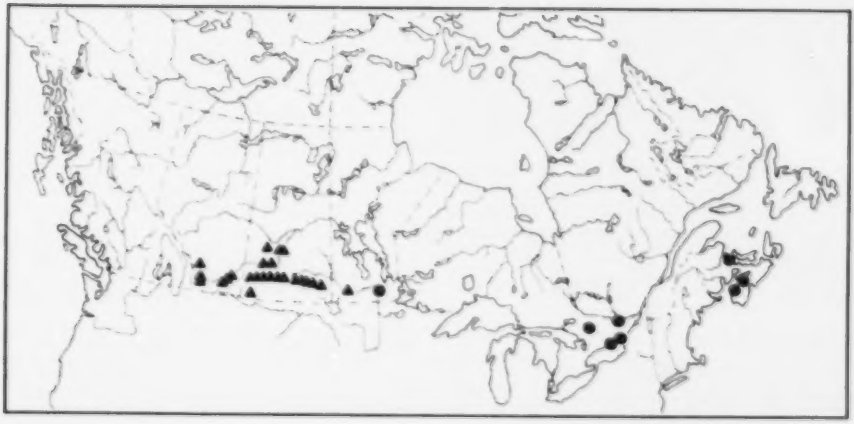
Xysticus ampullatus Turnbull et al. 1965:1241, figs. 12, 15, 94, 97, 171.

Male. Total length approximately 5.50 mm; carapace 2.60 ± 0.22 mm long, 2.59 ± 0.21 mm wide (20 specimens measured). Carapace dark red brown; pale median area enclosing much red brown pigment anterior to dorsal groove; each lateral area indistinctly divided by pale longitudinal band. Legs mottled red brown and off-white. Dorsum of abdomen with paired red brown areas separated by off-white lines. Palpal tibia with stout retrolateral apophysis, and with stout rotund expanded ventral apophysis (Figs. 597, 599). Embolus long, slender, not thickened distally, with pars pendula extending nearly to tip (Fig. 597); tegulum with two slender hooked apophyses of different lengths (Figs. 597, 599).

Female. Total length approximately 7.00 mm; carapace 3.37 ± 0.25 mm long, 2.72 ± 0.19 mm wide (14 specimens measured). General structure and color essentially as in male, but paler (Fig. 601). Epigynum with pair of long nearly parallel well-separated atrial sclerites (Fig. 598). Copulatory tubes large, conspicuous; spermathecae smooth, not angled at midlength (Fig. 600).

Range. Southern Manitoba to Nova Scotia, southward to South Dakota.

Comments. Specimens of *X. ampullatus* mainly resemble those of *X. bicuspis* and *X. acquiescens*. The distinctly expanded ventral apophysis on the male palpal tibia, and the long, well-separated, nearly parallel atrial sclerites and large copulatory tubes of the female distinguish specimens of *ampullatus*. Collections have been made by pitfall traps along the margins of meadows and in sparsely wooded areas.

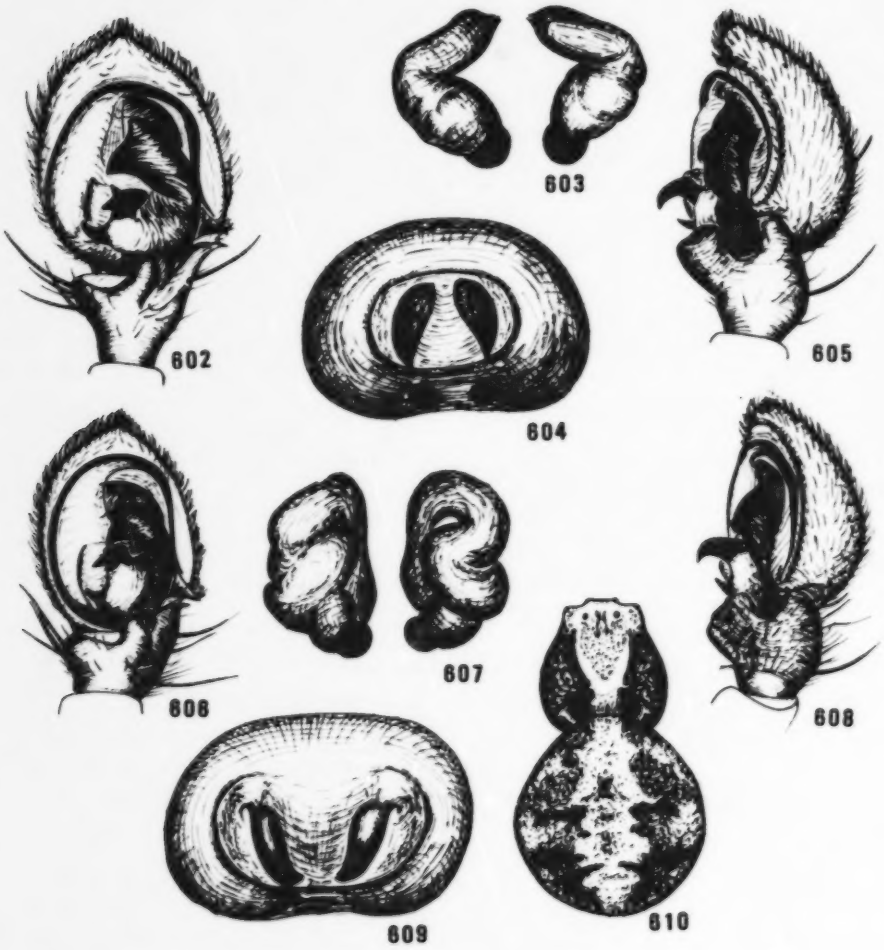


Map 49. Collection localities of *Xysticus ampullatus* (●) and *X. acquiescens* (▲).

Xysticus acquiescens Emerton

Figs. 602–605; Map 49

Xysticus acquiescens Emerton, 1919:107, figs. 15*a*, 15*b* (pl. 7); Turnbull et al. 1965:1241, figs. 13, 16, 95, 98.



Figs. 602–610. Structures of *Xysticus* spp. 602–605, *X. acquiescens*. 602, Palpus of male, ventral view; 603, Spermathecae; 604, Epigynum; 605, Palpus of male, retrolateral view. 606–610, *X. canadensis*. 606, Palpus of male, ventral view; 607, Spermathecae; 608, Palpus of male, retrolateral view; 609, Epigynum; 610, Body of female, dorsal view.

Male. Total length approximately 4.50 mm; carapace 2.40 ± 0.18 mm long, 2.35 ± 0.18 mm wide (20 specimens measured). Carapace dark brown; pale median area enclosing extensive brown pigment anterior to dorsal groove; each dark lateral area divided by longitudinal pale band. Legs mottled dark brown and off-white. Dorsum of abdomen with paired dark brown areas separated by off-white lines. Palpal tibia with blunt retrolateral apophysis, and with moderately slender ventral apophysis (Figs. 602, 605). Embolus long, slender, somewhat thickened and sinuous distad of pars pendula, with pars pendula extending slightly beyond midline of palpus (Fig. 602); tegulum with two slender hooked apophyses of different lengths (Figs. 602, 605).

Female. Total length approximately 6.50 mm; carapace 2.69 ± 0.20 mm long, 2.60 ± 0.14 mm wide (10 specimens measured). General structure and color essentially as in male, but paler. Epigynum with long atrial sclerites pointed at posterior ends and separated by deep depression (Fig. 604). Copulatory tubes not visible in dorsal view; spermathecae relatively smooth, angled near midlength (Fig. 603).

Range. Central Plains.

Comments. Specimens of *X. acquiescens* mainly resemble those of *X. bicuspis* and *X. ampullatus*, but are distinguished from both by the slender ventral apophysis on the palpal tibia (ventral view) and short pars pendula of the male, and by the long pointed atrial sclerites, which are separated by a deep depression, in the female. Specimens have been collected in fields and pastures by pitfall traps.

Xysticus canadensis Gertsch

Figs. 606–610; Map 50

Oxyptila cinerea Emerton, 1892:366, fig. 6.
Xysticus cinereus: Bryant 1908:63.
Xysticus canadensis Gertsch, 1934:5 (new name for *cinereus* Emerton, preoccupied in genus *Xysticus*); Turnbull et al. 1965:1244, figs. 24, 27, 106, 109, 169.

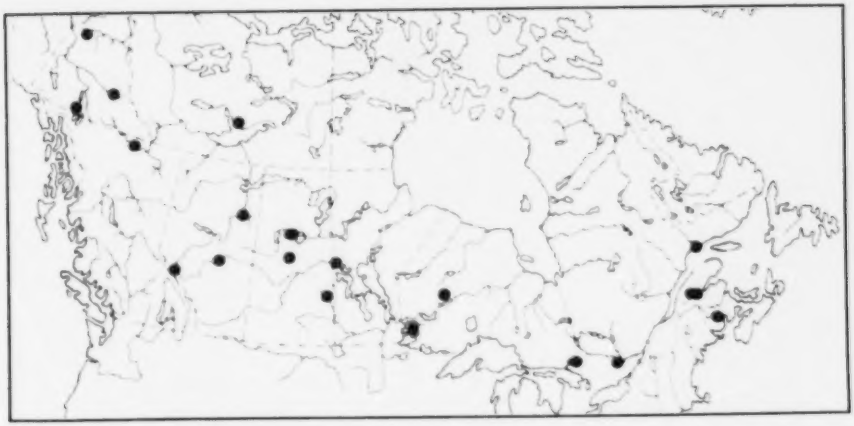
Male. Total length approximately 3.90 mm; carapace 2.05–2.22 mm long, 2.00–2.12 mm wide (four specimens measured). Carapace red brown, mottled with yellow; pale median area enclosing pale V and some diffuse dark pigment anterior to dorsal groove. Legs mottled red brown and yellow basad, straw yellow distad. Dorsum of abdomen with paired brown areas separated by off-white lines. Palpal tibia with broad blunt retrolateral and ventral apophyses (Figs. 606, 608). Embolus long, slender, with pars pendula extending nearly to tip (Fig. 606); tegulum with two apophyses, and with the distal apophysis broad at base and tapered toward tip (Figs. 606, 608).

Female. Total length approximately 4.35 mm; carapace 2.24 ± 0.29 mm long, 2.08 ± 0.30 mm wide (10 specimens measured). General structure

and color essentially as in male, but paler (Fig. 610). Epigynum with atrial sclerites shorter than atrium, tapered posteriad, distinctly separated (Fig. 609). Copulatory tubes broad, extending nearly full length of spermathecae; spermathecae appearing convoluted (Fig. 607).

Range. Yukon Territory to New Brunswick and New Hampshire.

Comments. Specimens of *X. canadensis* closely resemble those of *X. britcheri*, but differ by the distal tegular apophysis of the male palpus, which is broad at the base and tapered toward the tip, and by the atrial sclerites of the female, which are distinctly separated rather than touching. The copulatory tubes are longer and thicker, and the spermathecae appear convoluted. The habitat of *canadensis* is unrecorded.



Map 50. Collection localities of *Xysticus canadensis*.

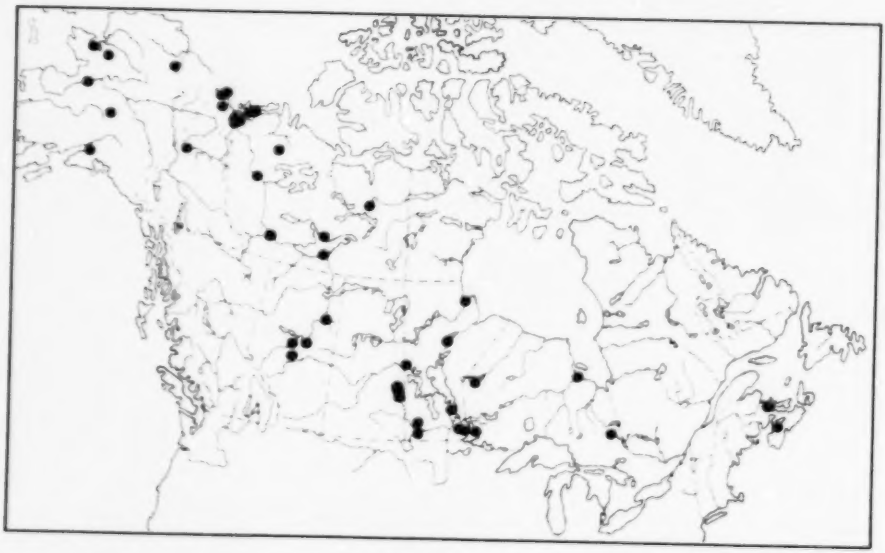
Xysticus britcheri Gertsch

Figs. 611–614; Map 51

Xysticus britcheri Gertsch, 1934:10, fig. 6; Turnbull et al. 1965:1244, figs. 25, 28, 107, 110.

Male. Total length approximately 4.50 mm; carapace 2.34 ± 0.26 mm long, 2.19 ± 0.20 mm wide (16 specimens measured). Carapace dark red brown, mottled with yellow; pale median area enclosing pale V and some dark pigment anterior to dorsal groove. Legs red brown, mottled with yellow. Dorsum of abdomen with paired red brown areas separated by off-white lines. Palpal tibia with blunt retrolateral and ventral apophyses (Figs. 611, 614). Embolus long, slender, with pars pendula extending nearly to tip (Fig. 611); tegulum not tapered except at distal hook, with two apophyses, and with the distal apophysis slender (Figs. 611, 614).

Figs. 611–614. Genitalia of *Xysticus britcheri*. 611, Palpus of male, ventral view; 612, Spermathecae; 613, Epigynum; 614, Palpus of male, retrolateral view.



Map 51. Collection localities of *Xysticus britcheri*.

Female. Total length approximately 5.00 mm; carapace 2.47 ± 0.26 mm long, 2.32 ± 0.21 mm wide (23 specimens measured). General structure and color essentially as in male, but paler. Epigynum with atrial sclerites nearly as long as atrium, touching at midline (Fig. 613). Copulatory tubes slender, approximately one-half length of spermatheca; spermathecae without convolutions (Fig. 612).

Range. Alaska to Newfoundland, southward to North Dakota and New York.

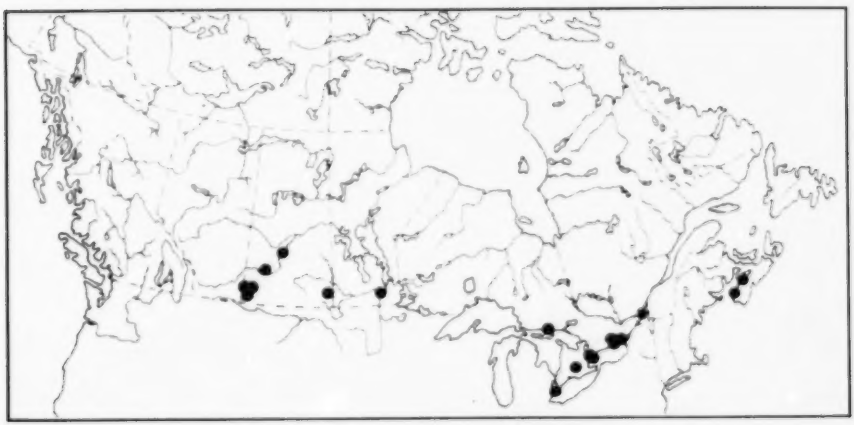
Comments. Specimens of *X. britcheri* closely resemble those of *X. canadensis*, but are distinguished by the slender untapered (except at distal end) distal apophysis on the palpal tegulum of the male, and by the relatively short slender copulatory tubes and simple spermathecae of females. Collections of *britcheri* have been made by pitfall traps and sweep nets in wooded areas.

Xysticus luctans (C.L. Koch)

Figs. 615–619; Map 52

Thomisus luctans C.L. Koch, 1845:63, fig. 998.
Xysticus quadrilineatus Keyserling, 1880:42, fig. 20 (pl. 1).
Xysticus luctans: Gertsch 1939:369, figs. 160, 161, 196; Turnbull et al. 1965:1249, figs. 38, 41, 120, 123, 172.

Male. Total length approximately 5.25 mm; carapace 2.80 ± 0.30 mm long, 2.68 ± 0.29 mm wide (28 specimens measured). Carapace yellow brown; each lateral area with two brown longitudinal lines; pale median area enclosing narrow midstripe and pair of brown spots anterior to dorsal groove. Legs pale red brown, with extremities paler. Dorsum of abdomen with paired brown areas separated by off-white lines. Palpal tibia with broad blunt retrolateral and ventral apophyses (Figs. 615, 617). Embolus long, flattened, somewhat twisted distally (Fig. 615); tegulum with two large apophyses, with the distal apophysis sharply "heeled," and with the basal one not extending to margin of tegulum (Fig. 615).



Map 52. Collection localities of *Xysticus luctans*.

Female. Total length approximately 6.00 mm; carapace 3.15 ± 0.27 mm long, 3.06 ± 0.25 mm wide (11 specimens measured). General structure and color (Fig. 616) essentially as in male, but legs finely speckled with brown. Epigynum with atrium wider posteriad than anteriad, containing extensive flat ledge (*atl*) with deep notch (Fig. 619). Copulatory tubes joined mesad; spermathecae convoluted (Fig. 618).

Range. Eastern Alberta to Nova Scotia, southward to Arkansas and Alabama.

Comments. The flattened twisted embolus and relatively short basal apophysis on the tegulum of the male, and the posteriorly broad epigynal atrium with extensive ridge in the female distinguish specimens of *X. luctans* from those of *X. emertoni* and *X. obscurus*. The striped carapace is also distinctive. Collections of *luctans* have been made by pitfall traps and vacuum collectors in grasslands, and less commonly in crops or weeds.

Figs. 615–624. Structures of *Xysticus* spp. 615–619, *X. luctans*. 615, Palpus of male, ventral view; 616, Body of female, dorsal view; 617, Palpus of male, retrolateral view; 618, Spermathecae; 619, Epigynum. 620–624, *X. emertoni*. 620, Palpus of male, ventral view; 621, Body of female, dorsal view; 622, Palpus of male, retrolateral view; 623, Epigynum; 624, Spermathecae. *atl*, atrial ledge.

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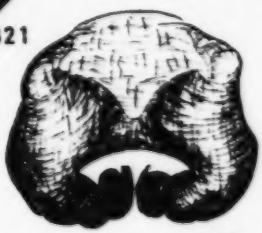


624

Xysticus emertoni Keyserling

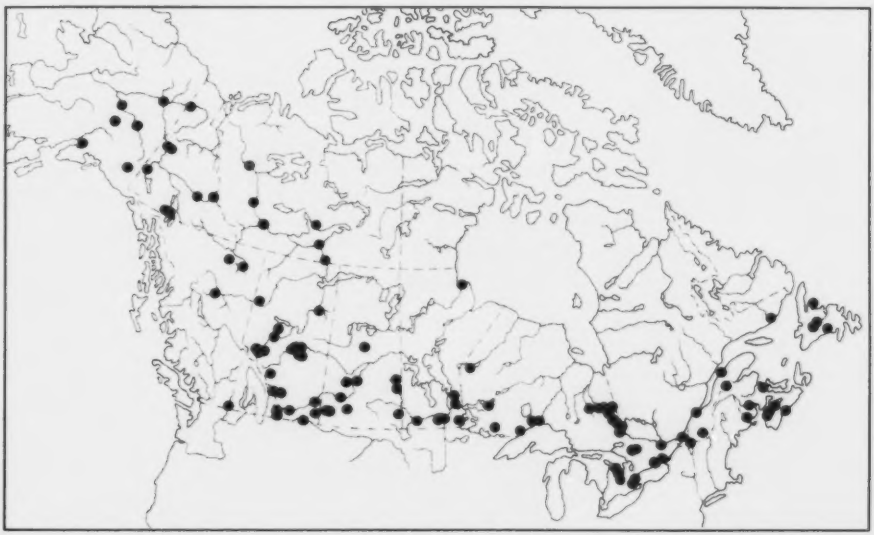
Figs. 419–421, 620–624; Map 53

Xysticus emertoni Keyserling, 1880:39, fig. 18 (pl. 1); Turnbull et al. 1965:1249, figs. 42, 45, 124, 127, 173.

Xysticus limbatus Keyserling, 1880:35, figs. 16*a*, 16*b* (pl. 1) (male only).

Male. Total length approximately 6.40 mm; carapace 3.34 ± 0.32 mm long, 3.21 ± 0.30 mm wide (30 specimens measured). Carapace (Figs. 419, 420) dark red brown, flecked with off-white; pale median area enclosing large area of mottled pigment anterior to dorsal groove. Legs dark red brown and off-white, with yellow extremities. Dorsum of abdomen with red brown areas separated by pale median band and transverse lines. Palpal tibia with long pointed retrolateral apophysis, and with shorter blunter ventral apophysis (Figs. 620, 622). Embolus moderately slender, somewhat sinuous, not tapered distad (Fig. 620); tegulum with two large apophyses, with the distal apophysis strongly "heeled," and with the basal one extending beyond margin of cymbium (Fig. 620).

Female. Total length approximately 7.80 mm; carapace 3.68 ± 0.35 mm long, 3.54 ± 0.37 mm wide (30 specimens measured). General structure and color essentially as in male, but paler (Figs. 421, 621). Epigynum with nearly round atrium containing broad ledge with shallow notch (Fig. 623). Copulatory tubes joined at midline; spermathecae not convoluted (Fig. 624).



Map 53. Collection localities of *Xysticus emertoni*.

Range. Alaska to Newfoundland, southward to New Mexico, Texas, and Georgia.

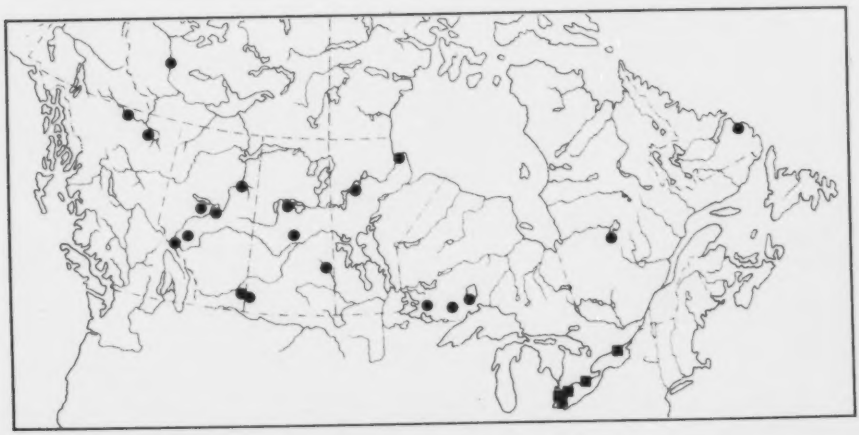
Comments. Specimens of *X. emertoni* mainly resemble those of *X. luctans* and *X. obscurus,* but lack the striped carapace of *luctans.* Male of *emertoni* have a longer basal tegular apophysis than those of either of these other species, and females have a rounded atrium and shallowly notched atrial ledge. Collections of *emertoni* have been made by pitfall traps in fields, meadows, and bogs and occasionally by sweep nets from herbaceous plants.

Xysticus obscurus Collett

Figs. 625–630; Map 54

Xysticus obscurus Collett, 1877:9; Turnbull et al. 1965:1250, figs. 43, 46, 125, 128, 174.

Male. Total length approximately 5.00 mm; carapace 3.03–3.72 mm long, 2.98–3.53 mm wide (eight specimens measured). Carapace red brown, flecked with off-white; pale median area enclosing large area of mottled pigment anterior to dorsal groove. Legs pale red brown; femora mottled with white. Dorsum of abdomen with paired brown areas separated by off-white lines. Palpal tibia with long pointed retrolateral apophysis, and with rounded ventral apophysis (Figs. 625, 627). Embolus long, moderately slender, not sinuous distad (Fig. 625); tegulum with two large apophyses, with the distal apophysis strongly "heeled," and with the long broad basal one extending approximately to margin of cymbium (Fig. 625).

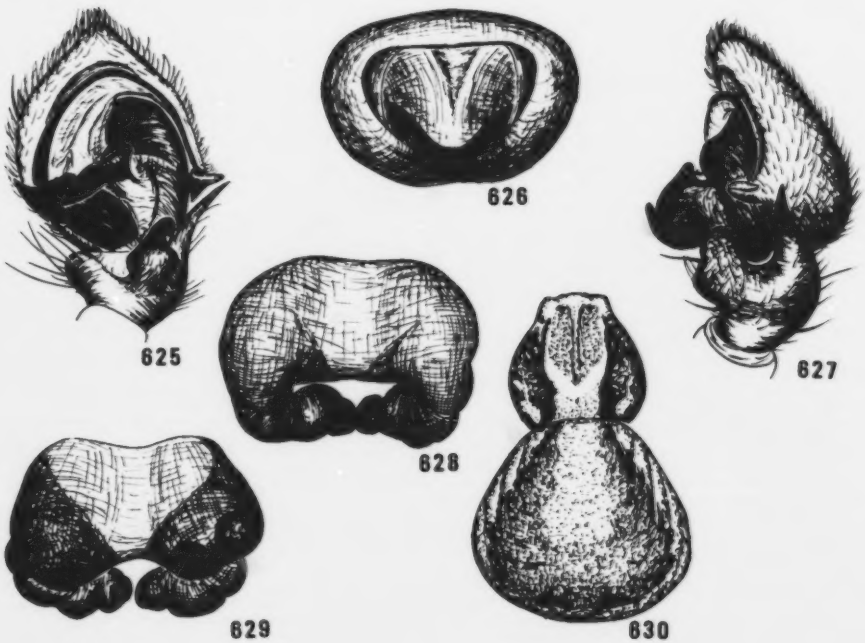


Map 54. Collection localities of *Xysticus obscurus* (●) and *X. fraternus* (■).

Female. Total length approximately 6.25 mm; carapace 2.93–3.91 mm long, 2.70–3.72 mm wide (seven specimens measured). General structure and color essentially as in male, but paler (Fig. 630). Epigynum with atrium broader anteriad than posteriad, and with small ledge (Fig. 626). Copulatory tubes joined at midline; spermathecae not convoluted (Figs. 628, 629).

Range. Northwest Territories, and northern British Columbia to Labrador, southward to New Hampshire; Europe.

Comments. Specimens of *X. obscurus* mainly resemble those of *X. luctans* and *X. emertoni*, but they lack the striped carapace of *luctans*. The basal tegular apophysis of the male is broad and extends approximately to the cymbial margin, and the atrium of the female is broadest anteriad and the ledge small, in contrast with these structures in the other species. Specimens of *obscurus* have been collected by pitfall traps and from wasp nests in coniferous forests.



Figs. 625–630. Structures of *Xysticus obscurus*. 625, Palpus of male, ventral view; 626, Epigynum; 627, Palpus of male, retrolateral view; 628 and 629, Spermathecae; 630, Body of female, dorsal view.

Xysticus elegans Keyserling

Figs. 417, 631–634; Map 55

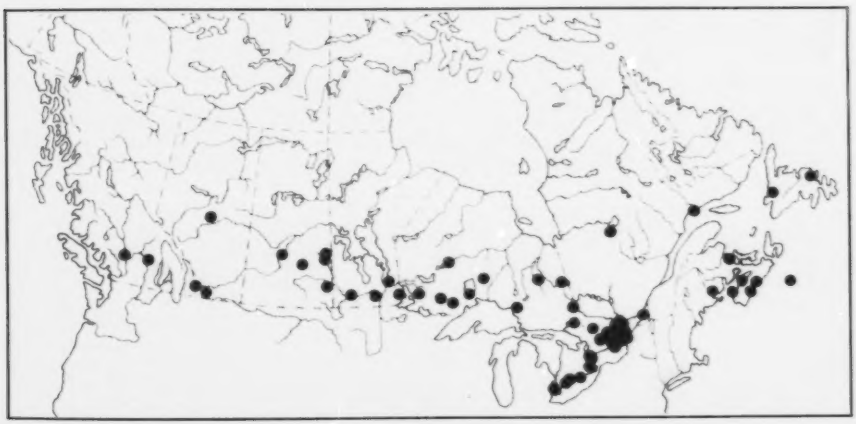
Xysticus elegans Keyserling, 1880:31, fig. 14 (pl. 1) (male only); Turnbull et al. 1965:1248, figs. 37, 40, 119, 122.

Xysticus limbatus Keyserling, 1880:35, fig. 16 (pl. 1) (female only).
Xysticus borealis Keyserling, 1884*a*:668, fig. 17 (pl. 21).

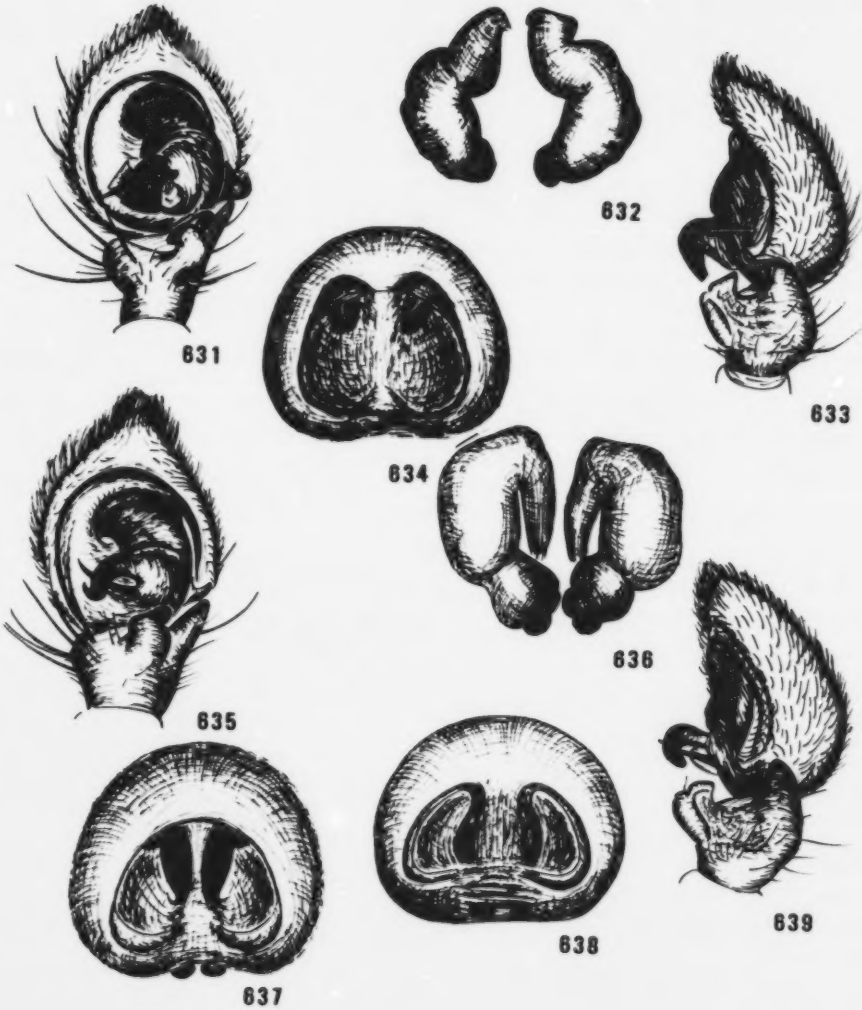
Male. Total length approximately 6.40 mm; carapace 3.07 ± 0.36 mm long, 3.00 ± 0.38 mm wide (20 specimens measured). Carapace (Fig. 417) red brown; pale median area enclosing patch of mottled pigment anterior to dorsal groove. Legs mottled red brown and off-white. Dorsum of abdomen with paired angular brown spots separated by off-white lines. Palpal tibia with short blunt retrolateral and ventral apophyses (Figs. 631, 633). Embolus long, slender (Fig. 631); tegulum with two apophyses, with a short broad hooked distal apophysis, and with a needlelike basal one (Fig. 631).

Female. Total length approximately 8.70 mm; carapace 3.84 ± 0.59 mm long, 3.77 ± 0.62 mm wide (20 specimens measured). General structure and color essentially as in male, but paler. Epigynum with rounded atrium that has pair of anterior extensions, without atrial sclerites or ledge (Fig. 634). Copulatory tubes barely visible in dorsal view; spermathecae smooth, arched (Fig. 632).

Range. British Columbia to Newfoundland, southward to New Mexico and Georgia.



Map 55. Collection localities of *Xysticus elegans*.



Figs. 631–639. Genitalia of *Xysticus* spp. 631-634, *X. elegans*. 631, Palpus of male, ventral view; 632, Spermathecae; 633, Palpus of male, retrolateral view; 634, Epigynum. 635–639, *X. funestus*. 635, Palpus of male, ventral view; 636, Spermathecae; 637 and 638, Epigynum; 639, Palpus of male, retrolateral view.

Comments. Specimens of *X. elegans* somewhat resemble those of *X. funestus*, but differ in the male by having a broad distal tegular apophysis and in the female by having anterior extensions of the epigynal atrium and barely visible copulatory tubes. Collections of *elegans* have been made by pitfall traps in partly wooded areas and by hand in leaf litter, under stones and logs, and occasionally on herbaceous plants.

Xysticus funestus Keyserling

Figs. 635–639; Map 45

Xysticus funestus Keyserling, 1880:10, fig. 2 (pl. 1); Turnbull et al. 1965:1247, figs. 36, 39, 118, 121.
Xysticus nervosus Banks, 1892:55, figs. 8, 8*a* (pl. 3), fig. 84 (pl. 4).
Xysticus brunneus Banks, 1892:53, fig. 4 (pl. 3).
Xysticus crudelis Banks, 1892:53, fig. 5 (pl. 3).

Male. Total length approximately 4.00 mm; carapace 1.96–3.14 mm long, 2.89–3.10 mm wide (three specimens measured). Carapace brown to orange, with indistinct pale median area. Legs brown and off-white. Dorsum of abdomen with narrow paired brown areas separated by broad bands of light brown and white. Palpal tibia with short broad retrolateral and ventral apophyses (Figs. 635, 639). Embolus long, moderately slender (Fig. 635); tegulum with two apophyses, with the distal apophysis slender and hooked, and with the basal one needlelike (Fig. 635).

Female. Total length approximately 7.00 mm; carapace 2.79–4.42 mm long, 2.79–4.28 mm wide (eight specimens measured). General structure and color essentially as in male, but carapace and legs paler; dorsum of abdomen gray yellow to red brown without spots or bands. Epigynum with atrium wider posteriad than anteriad, without anterior extensions, with pair of dark flat sclerites in anterior half (Figs. 637, 638). Copulatory tubes distinct, extending posteriad between spermathecae; spermathecae not arched, with one transverse groove (Fig. 636).

Range. Texas to Florida, northward to southern Ontario and Massachusetts.

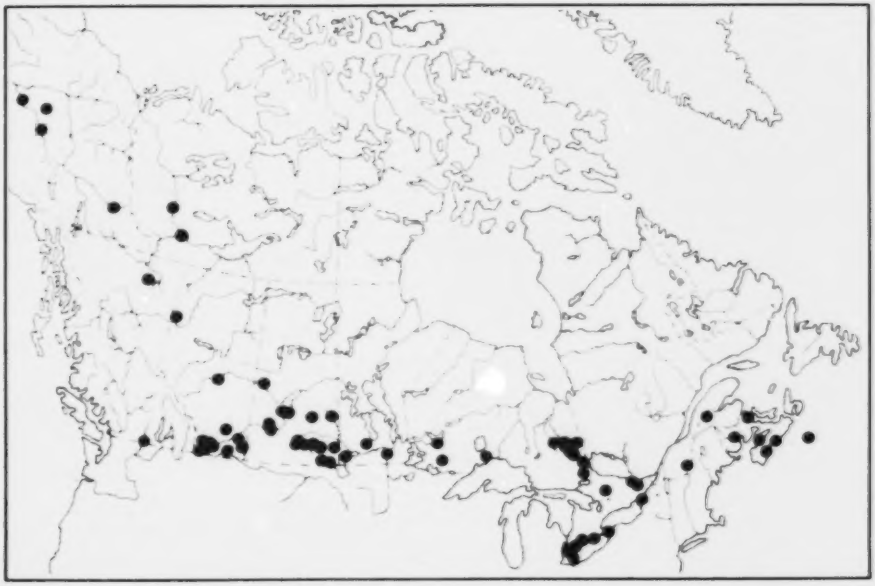
Comments. Specimens of *X. funestus* mainly resemble those of *X. elegans*, but differ by the slender distal tegular apophysis of the male and by the lack of anterior extensions in the atrium and the distinct copulatory tubes of the female. Collections have been made by sweep nets in fields and by hand under stones and bark. Adult males and subadult females were collected in August.

Xysticus ferox (Hentz)

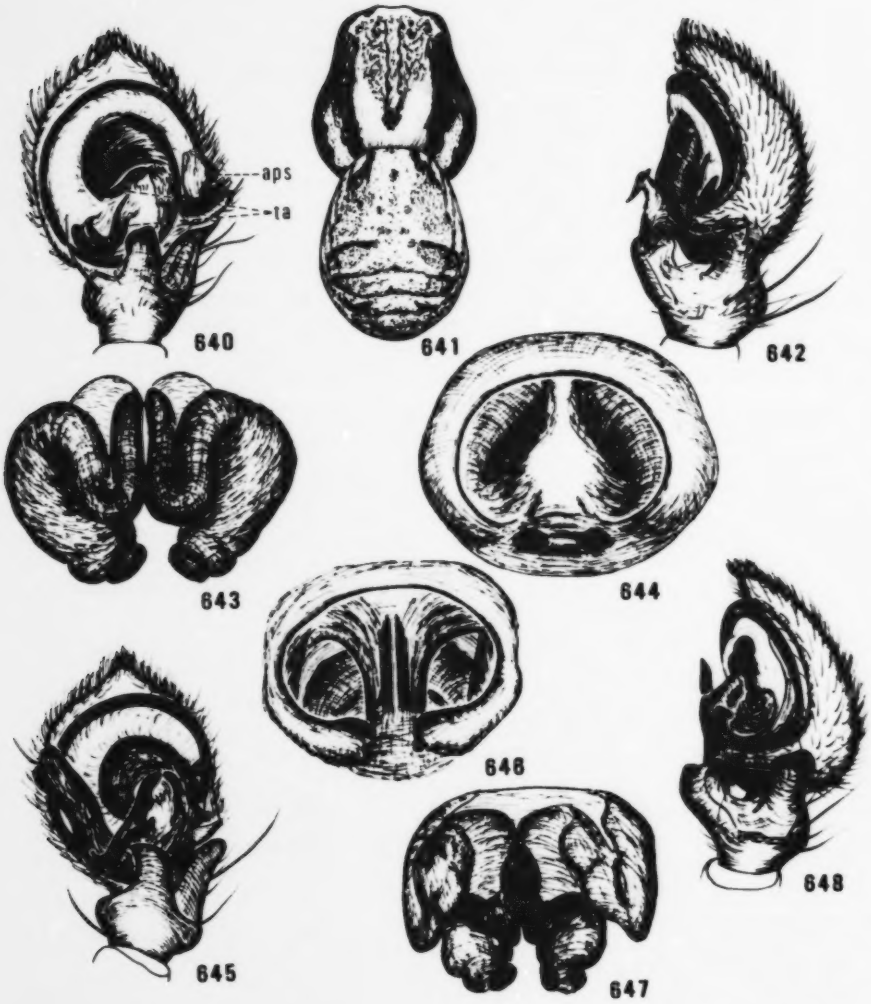
Figs. 640–644; Map 56

Thomisus ferox Hentz, 1847:445, fig. 3 (pl. 23).
Xysticus stomachosus Keyserling, 1880:7, fig. 1 (pl. 1).
Xysticus distinctus Banks, 1892:52, fig. 89 (pl. 3).
Xysticus transversus Banks, 1892:54, figs. 6, 6*a*, 6*b* (pl. 3).
Xysticus ferox: Gertsch 1939:385, figs. 212, 213, 225, 233; Turnbull et al. 1965:1251, figs. 44, 47, 126, 129, 175.

Male. Total length approximately 5.00 mm; carapace 2.57 ± 0.19 mm long, 2.51 ± 0.20 mm wide (20 specimens measured). Carapace mottled dark brown and yellow; pale median area enclosing area of mottled pigment anterior to dorsal groove; each dark lateral area partly divided by pale longitudinal band. Legs mottled brown and off-white. Dorsum of abdomen with paired red brown areas separated by paler lines. Palpal tibia with broad blunt retrolateral and ventral apophyses (Figs. 640, 642). Embolus long, moderately slender, with short hooked apical sclerite (Figs. 640, 642); tegulum with two apophyses, with the distal apophysis small and T-shaped, and with the basal one flattened and curled (Fig. 640).



Map 56. Collection localities of *Xysticus ferox*.



Figs. 640–648. Structures of *Xysticus* spp. 640–644, *X. ferox*. 640, Palpus of male, ventral view; 641, Body of female, dorsal view; 642, Palpus of male, retrolateral view; 643, Spermathecae; 644, Epigynum. 645–648. *X. fraternus*. 645, Palpus of male, ventral view; 646, Epigynum; 647, Spermathecae; 648, Palpus of male, retrolateral view. *aps*, apical sclerite; *ta*, tegular apophysis.

Female. Total length approximately 6.50 mm; carapace 2.55–3.69 mm long, 2.40–3.69 mm wide (eight specimens measured). General structure and color essentially as in male, but legs paler (Fig. 641). Epigynum with rounded atrium, and with median septum consisting of low broad ridge (Fig. 644). Copulatory tubes long, thick, doubled upon themselves, mesal in position; spermathecae large, smooth (Fig. 643).

Range. Alaska to Nova Scotia (including Sable Island), southward to Utah, Texas, and Georgia.

Comments. Specimens of *X. ferox* mainly resemble those of *X. fraternus*, but differ by having smaller tegular apophyses in the male, the basal apophysis being short and curled, and in having the median septum broadening posteriad in the female. Specimens have been collected in pitfall traps, by hand under stones and logs, and less often by sweep nets from flowering herbs.

Xysticus fraternus Banks

Figs. 645–648; Map 54

Xysticus hamatus Keyserling, 1884b:521, fig. 22 (pl. 1).

Xysticus fraternus Banks, 1895*a*:90; Turnbull et al. 1965:1251, figs. 48, 51, 130, 133.

Xysticus hamatinus Banks, 1910:48 (new name for *hamatus* Keyserling, preoccupied in genus *Xysticus*).

Male. Total length approximately 3.50 mm; carapace 2.66–2.78 mm long, 2.54–2.70 mm wide (four specimens measured). Carapace mottled light and dark brown; pale median area enclosing off-white V anterior to dorsal groove. Legs mottled light and dark brown, light brown distad. Dorsum of abdomen with paired dark areas separated by off-white lines. Palpal tibia with broad blunt retrolateral and ventral apophyses (Figs. 645, 648). Embolus long, moderately slender, with curved apical sclerite (Figs. 645, 648); tegulum with two large apophyses, with the distal apophysis T-shaped, and with the basal one long, straight, and flat (Fig. 645).

Female. Total length approximately 4.50 mm; carapace approximately 2.80 mm long, 2.60 mm wide (one specimen measured). General structure and color essentially as in male, but paler. Epigynum with atrium broader than long, and with flat median septum that broadens anteriad (Fig. 646). Copulatory tubes broad, bent upon themselves, lateral in position; spermathecae moderately large (Fig. 647).

Range. New Mexico to Georgia, northward to Minnesota, southern Ontario, and Massachusetts.

Comments. Specimens of *X. fraternus* mainly resemble those of *X. ferox*, but differ by having larger tegular apophyses in the male, the basal

one being flat and straight, and in having the median septum broadening anteriad in the female. The copulatory tubes are lateral in position rather than mesal. Specimens have been collected by pitfall traps in partly wooded areas.

Xysticus banksi Bryant

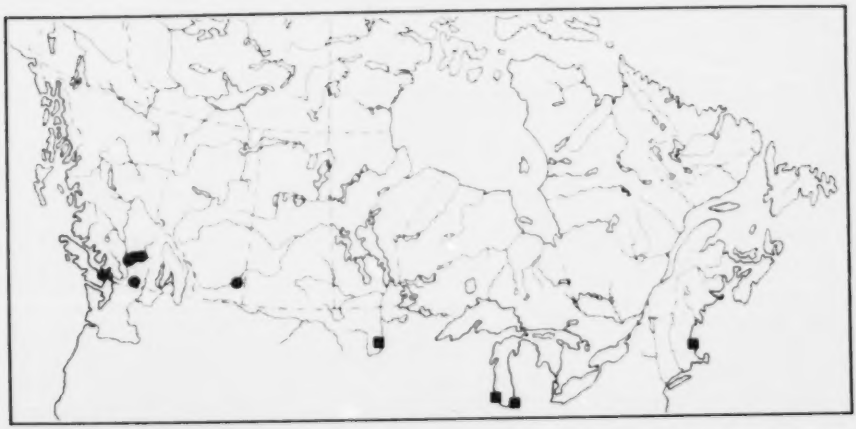
Figs. 649–652; Map 57

Xysticus pallidus Bryant, 1930*a*:138, figs. 11, 12, 14.

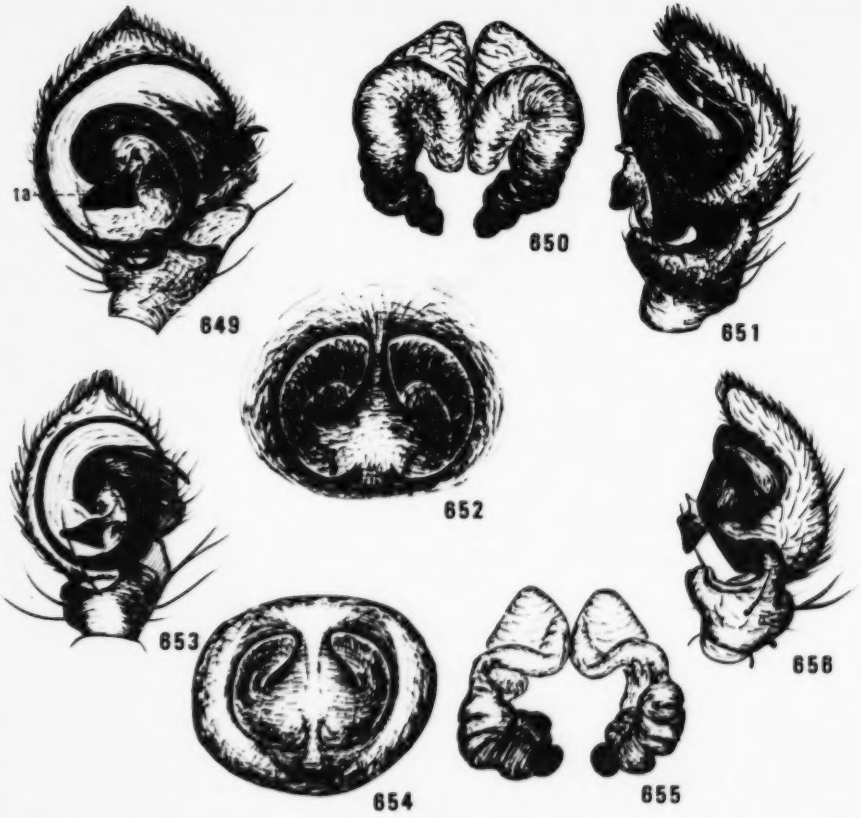
Xysticus banksi Bryant, 1933:178 (new name for *pallidus* Bryant, preoccupied in genus *Xysticus*); Turnbull et al. 1965:1252, figs. 50, 53, 132, 135.

Male. Total length approximately 3.50 mm; carapace approximately 2.60 mm long, 2.60 mm wide (one specimen measured). Carapace mottled brown and off-white; pale median area enclosing off-white V anterior to dorsal groove. Legs mottled brown and off-white. Dorsum of abdomen with paired brown areas separated by off-white lines. Palpal tibia with short broad retrolateral and ventral apophyses (Figs. 649, 651). Embolus long, ribbon-like, with prominent handlike apical sclerite (Figs. 649, 651); tegulum with one apophysis that is flattened and approximately triangular in shape (Fig. 649).

Female. Total length approximately 6.00 mm; carapace 2.65–3.44 mm long, 2.56–3.35 mm wide (five specimens measured). General structure and color essentially as in male, but paler. Epigynum with rounded atrium, and with low median septum that extends one-half length of atrium (Fig. 652). Copulatory tubes broad, lying mesad of spermathecae; spermathecae slender, tapered (Fig. 650).



Map 57. Collection localities of *Xysticus banksi* (■) and *X. gertschi* (●).



Figs. 649–656. Genitalia of *Xysticus* spp. 649–652, *X. banksi*. 649, Palpus of male, ventral view; 650, Spermathecae; 651, Palpus of male, retrolateral view; 652, Epigynum. 653–656, *X. gertschi*. 653, Palpus of male, ventral view; 654, Epigynum; 655, Spermathecae; 656, Palpus of male, retrolateral view. *ta*, tegular apophysis.

Range. North Dakota to Massachusetts, southward to North Carolina.

Comments. Specimens of *X. banksi* mainly resemble those of *X. gertschi*, *X. californicus*, and *X. cunctator*. They differ by having a prominent handlike apical sclerite on the embolus of the male and a rounded atrium and a median septum that is approximately one-half the length of the atrium in the female. Specimens of *banksi* have been collected by pitfall traps and by hand in litter on fields and beaches.

Xysticus gertschi Schick

Figs. 653–656; Map 57

Xysticus gertschi Schick, 1965:159, figs. 227–230; Turnbull et al. 1965: 1253, figs. 49, 52, 131, 134.

Male. Total length approximately 4.00 mm; carapace 1.97 ± 0.13 mm long, 1.94 ± 0.13 mm wide (17 specimens measured). Carapace dark red brown, with off-white V anterior to dorsal groove. Femora I and II dark red brown; femora III and IV mottled; distal segments of all legs yellow brown. Dorsum of abdomen with small paired dark brown areas separated by off-white transverse lines and yellow median longitudinal band. Palpal tibia with short blunt retrolateral and ventral apophyses (Figs. 653, 656). Embolus long, slender, with flat grooved apical sclerite that bears short spine (Figs. 653, 656); tegulum with one apophysis that is flattened and triangular (Fig. 653).

Female. Total length approximately 5.50 mm; carapace 2.30 ± 0.14 mm long, 2.27 ± 0.15 mm wide (13 specimens measured). General structure and color essentially as in male, but carapace and legs mottled; dark spots on dorsum of abdomen reduced. Epigynum with rounded atrium, and with short broad median septum (Fig. 654). Copulatory tubes slender, extending posteriad then laterad; spermathecae moderately slender, with several transverse grooves (Fig. 655).

Range. Northern Mexico and California, northward to southern British Columbia and Alberta.

Comments. Specimens of *X. gertschi* mainly resemble those of *X. banksi*, *X. californicus*, and *X. cunctator*, but differ by having a flattened grooved, and spined apical sclerite on the embolus of the male and by having a rounded atrium, a short, broad median septum, and slender bent copulatory tubes in the female. Collections of *gertschi* have been made by sweep nets from sagebrush.

Xysticus cunctator Thorell

Figs. 657–666; Map 58

Xysticus cunctator Thorell, 1877:494; Turnbull et al. 1965:1253, figs. 54, 55, 58, 60, 136, 139.

Xysticus lenis Keyserling, 1880:27, fig. 11 (pl. 1).

Xysticus ancistrophor Chamberlin & Gertsch, 1929:104, fig. 40 (pl. 4).

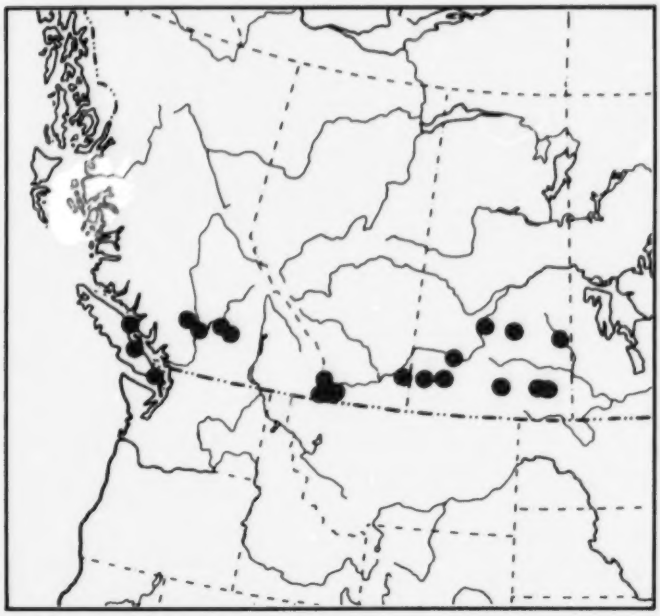
Male. Total length approximately 4.50 mm; carapace 2.22 ± 0.15 mm long, 2.15 ± 0.14 mm wide (30 specimens measured). Carapace red brown to mottled brown and off-white; pale median area enclosing mottled area anterior to dorsal groove; dark lateral areas indented posteriad. Legs mottled brown and off-white. Dorsum of abdomen with paired brown areas separated

by off-white median band and transverse lines. Palpal tibia with short broad retrolateral and ventral apophyses (Figs. 657, 659). Embolus long, slender, with shallowly hooked apical sclerite (Figs. 657–660); tegulum with one apophysis that is flattened and triangular (Fig. 657).

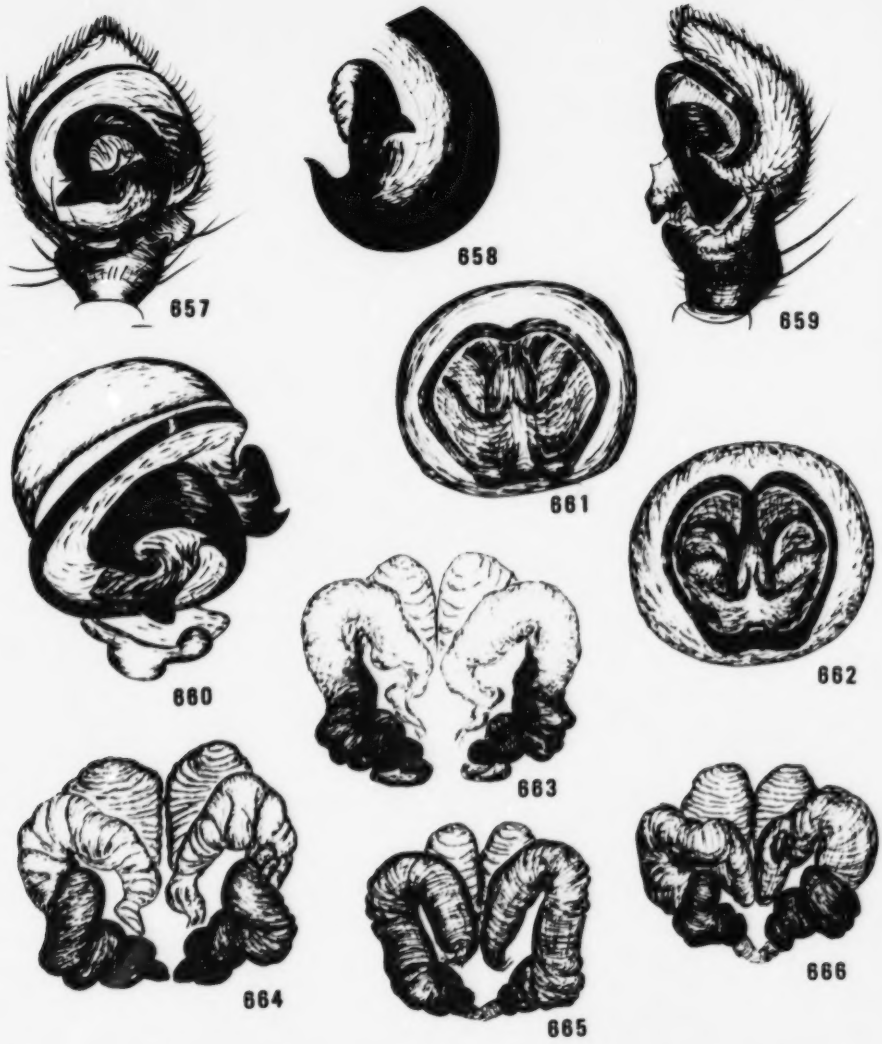
Female. Total length approximately 6.00 mm; carapace 2.61 ± 0.36 mm long, 2.56 ± 0.36 mm wide (30 specimens measured). General structure and color essentially as in male but paler. Epigynum with elongate atrium, and with flattened median septum that is expanded laterad and usually more than one-half length of atrium (Figs. 661, 662). Copulatory tubes arising posteriad between spermathecae and extending anterolaterad; spermathecae usually rather rough and thick (Figs. 663–666).

Range. Arizona northward to southern British Columbia, Alberta, and Saskatchewan.

Comments. Specimens of *X. cunctator* are distinguished from those of other species by the hooked apical sclerite on the male embolus and by the elongate atrium of the female epigynum. The habitat of *cunctator* is unrecorded.



Map 58. Collection localities of *Xysticus cunctator*.



Figs. 657–666. Genitalia of *Xysticus cunctator*. 657, Palpus of male, ventral view; 658, Embolus of male; 659, Palpus of male, retrolateral view; 660, Palpus of male, distal view; 661 and 662, Epigynum; 663–666, Spermathecae.

Xysticus punctatus Keyserling

Figs. 667–671; Map 59

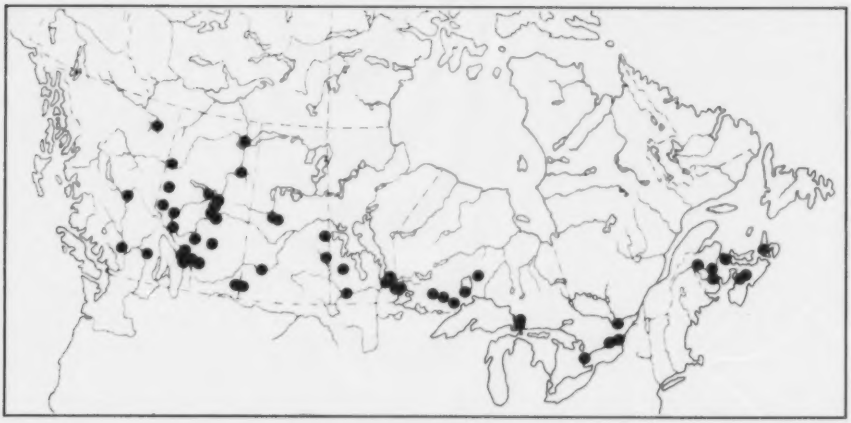
Xysticus punctatus Keyserling, 1880:30, fig. 13 (pl. 1); Turnbull et al. 1965:1256, figs. 61, 64, 138, 141, 178.

Xysticus formosus Banks, 1892:56, fig. 9 (pl. 3).

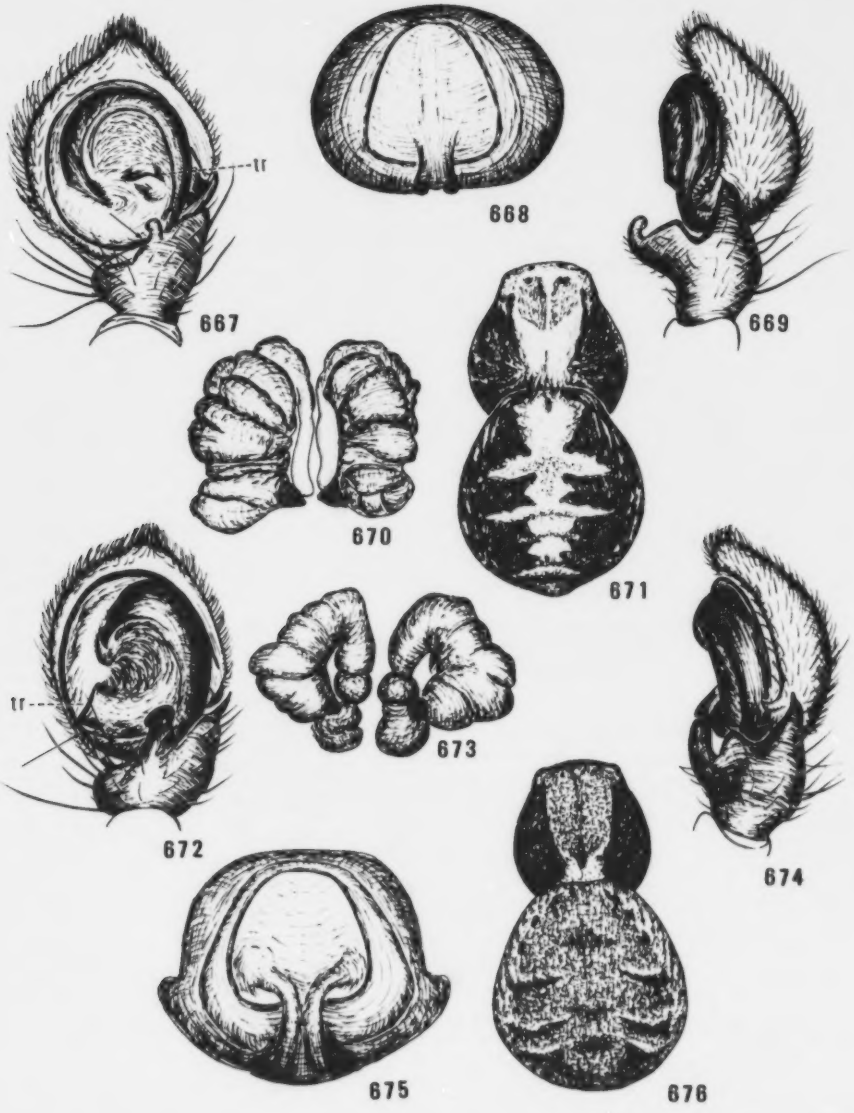
Male. Total length approximately 3.75 mm; carapace 2.10 ± 0.17 mm long, 2.07 ± 0.16 mm wide (16 specimens measured). Carapace mottled red and brown, with pale V and paler mottled area anterior to dorsal groove. Legs mottled red brown and off-white. Dorsum of abdomen with paired orange brown areas separated by broad pale median area. Palpal tibia with broad blunt retrolateral apophysis (Fig. 669), and with broad slightly hooked ventral apophysis (Fig. 667). Embolus long, fine (Fig. 667); tegulum with short transverse ridge near center (90–100° on tegular circle, Fig. 667).

Female. Total length approximately 5.40 mm; carapace 2.63 ± 0.31 mm long, 2.59 ± 0.29 mm wide (30 specimens measured). General structure and color essentially as in male, but paler (Fig. 671). Epigynum with atrium longer than broad, broader posteriad than anteriad, and with short flat median septum lying at posterior margin (Fig. 668). Copulatory tubes slender, arising posteriad and extending to anterior ends of spermathecae; spermathecae elongate, nearly uniform in width, deeply grooved (Fig. 670).

Range. British Columbia to Nova Scotia, southward to California and North Carolina.



Map 59. Collection localities of *Xysticus punctatus*.



Figs. 667–676. Structures of *Xysticus* spp. 667–671, *X. punctatus*. 667, Palpus of male, ventral view; 668, Epigynum; 669, Palpus of male, retrolateral view; 670, Spermathecae; 671, Body of female, dorsal view. 672–676, *X. montanensis*. 672, Palpus of male, ventral view; 673, Spermathecae; 674, Palpus of male, retrolateral view; 675, Epigynum; 676, Body of female, dorsal view. *tr*, tegular ridge.

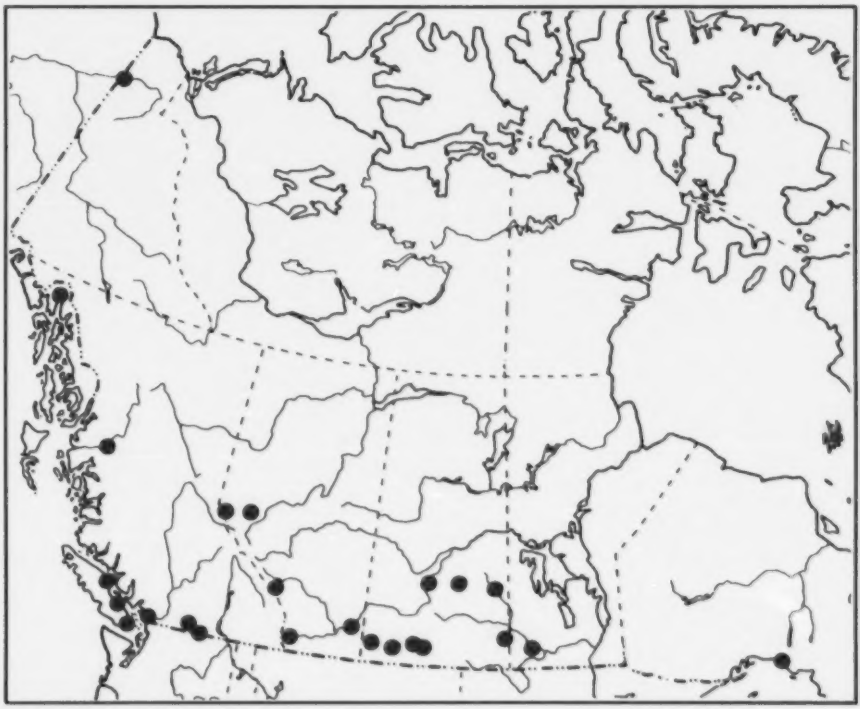
Comments. Specimens of *X. punctatus* mainly resemble those of *X. montanensis*, but differ by having the tegular ridge of the male palpus near the center and the hook on the ventral tibial apophysis very small, and by having a small flat median septum in the epigynum of the female. Specimens have been collected mainly from the branches of conifers and less often in pitfall traps in coniferous forests.

Xysticus montanensis Keyserling

Figs. 672–676; Map 60

Xysticus montanensis Keyserling, 1887:479, fig. 40 (pl. 6); Turnbull et al. 1965:1255, figs. 62, 65, 142, 145, 176.

Xysticus hesperus Gertsch, 1934:6, fig. 11.



Map 60. Collection localities of *Xysticus montanensis*.

Male. Total length approximately 3.30 mm; carapace 2.05 ± 0.20 mm long, 1.94 ± 0.19 mm wide (13 specimens measured). Carapace dark red brown, sometimes mottled with lighter pigment. Legs red brown to nearly black, flecked with off-white toward base. Dorsum of abdomen light brown to dark brown, with few scattered dark marks. Palpal tibia with pointed retrolateral apophysis (Fig. 674), and with broad ventral apophysis bearing large knob (Fig. 672). Embolus long, slender (Fig. 672); tegulum with ridge near prolaterobasal margin (at about 200–225° on tegular circle, Fig. 672).

Female. Total length approximately 5.60 mm; carapace 2.22–2.40 mm long, 2.14–2.31 mm wide (four specimens measured). General structure and color essentially as in male, but carapace more noticeably setaceous (Fig. 676). Epigynum with atrium longer than broad, broader posteriad than anteriad, and with median septum composed of paired ridges that extend far posteriad of atrial rim (Fig. 675). Copulatory tubes rather stout, arising posteriad of spermathecae, extending to anterior end of spermathecae; spermathecae widest at middle, with several transverse grooves (Fig. 673).

Range. Alaska to central Ontario, southward to California and New Mexico.

Comments. Specimens of *X. montanensis* mainly resemble those of *X. punctatus*, but differ by having the tegular ridge of the male palpus located near the prolaterobasal margin of the tegulum and a large knob on the ventral tibial apophysis, and by having a long ridged median septum in the epigynum of the female. The copulatory tubes of the female of *punctatus* are longer and thicker. Collections of *punctatus* have been made by pitfall traps, by hand, and by sweep nets in wooded areas and fields.

Xysticus alboniger Turnbull et al.

Figs. 677–680; Map 61

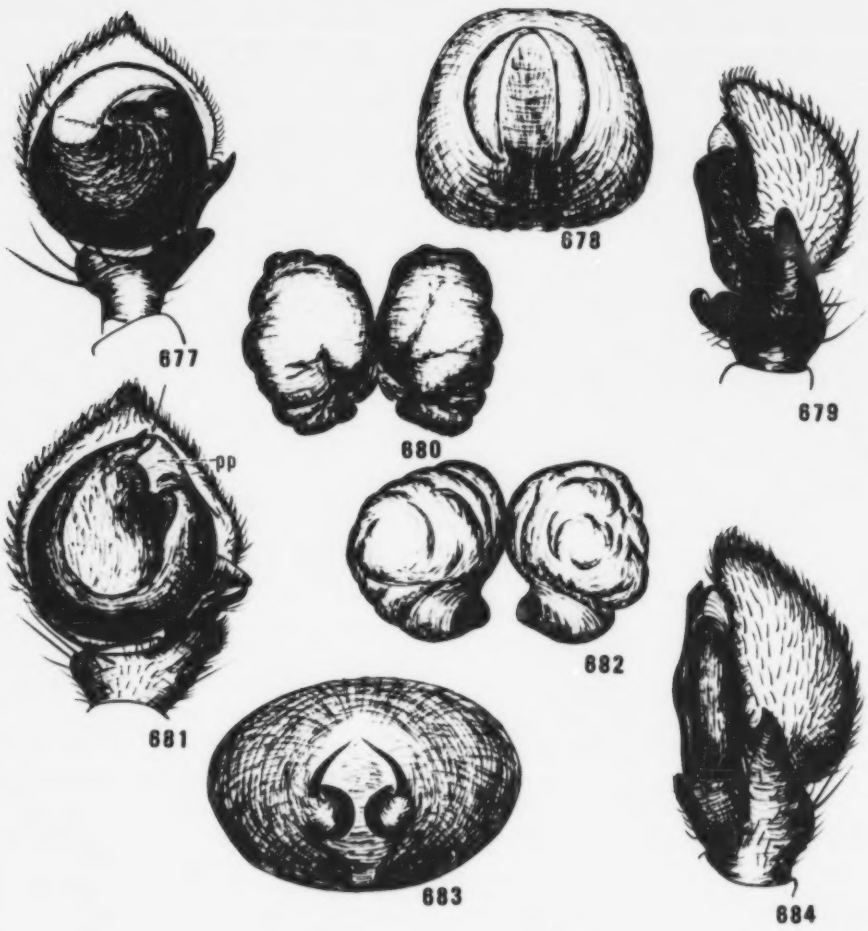
Synema bicolor Keyserling, 1884*a*:667, fig. 16 (pl. 21).
Xysticus inornatus Emerton, 1892:366, fig. 5 (pl. 29).
Xysticus alboniger Turnbull et al. 1965:1259, figs. 72, 75, 149, 152 (new name for *bicolor* Keyserling and *inornatus* Emerton, both preoccupied in genus *Xysticus*).

Male. Total length approximately 3.60 mm; carapace 2.06 ± 0.11 mm long, 1.90 ± 0.11 mm wide (20 specimens measured). Carapace red black to black. Legs red black basad, yellow with few white spots and streaks distad. Dorsum of abdomen off-white or gray. Palpal tibia with long blunt retrolateral apophysis (Fig. 679), and with short broad ventral apophysis (Fig. 677). Embolus short, curved, arising midlength on tegulum on prolateral side (Fig. 677); tegulum with low ridge at base of embolus (Fig. 677).

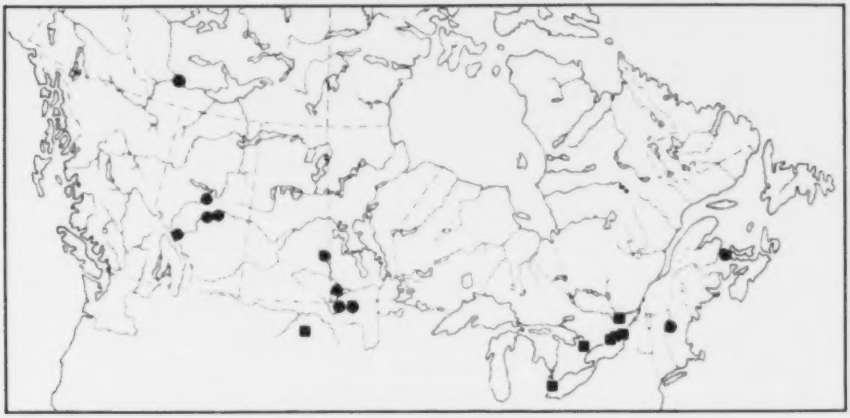
Female. Total length approximately 4.70 mm; carapace 2.35 ± 0.17 mm long, 2.20 ± 0.16 mm wide (12 specimens measured). General structure and color essentially as in male. Epigynum with elongate atrium having broad

margin (Fig. 678). Spermathecae approximately elliptical in outline, with few grooves and small swellings (Fig. 680).

Range. Florida northward to North Dakota and southern Ontario.



Figs. 677–684. Genitalia of *Xysticus* spp. 677–680, *X. alboniger*. 677, Palpus of male, ventral view; 678, Epigynum; 679, Palpus of male, retrolateral view; 680, Spermathecae. 681–684, *X. benefactor*. 681, Palpus of male, ventral view; 682, Spermathecae; 683, Epigynum; 684, Palpus of male, retrolateral view; *pp*, pars pendula.



Map 61. Collection localities of *Xysticus alboniger* (■) and *X. ellipticus* (●).

Comments. Specimens of *X. alboniger* differ from those of all other Canadian species in the uniformly dark carapace and off-white to gray abdomen. In addition, the embolus of the male arises approximately mid-length on the tegulum on the prolateral side, and the atrium of the epigynum in the female is narrow and elongate. Collections of *alboniger* have been made by pitfall traps in litter of fields, forests, and bogs, and by sweep nets in grasses, shrubs, and trees.

Xysticus benefactor Keyserling

Figs. 681–684; Map 62

Xysticus benefactor Keyserling, 1880:22, fig. 8 (pl. 1); Turnbull et al. 1965:1258, figs. 67, 70, 144, 147.
Xysticus vernilis Keyserling, 1882:304, fig. 23 (pl. 11).

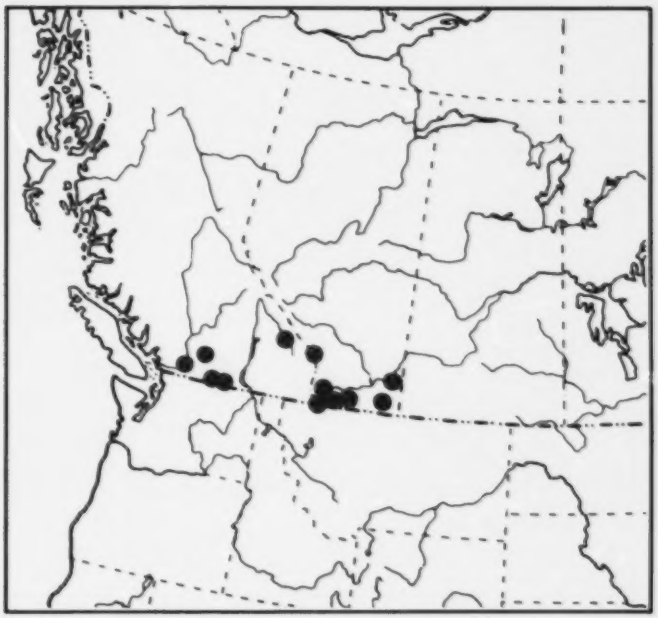
Male. Total length approximately 3.75 mm; carapace 2.11 ± 0.09 mm long, 2.11 ± 0.08 mm wide (13 specimens measured). Carapace mottled dark red brown and yellow, with white V and mottled pigment anterior to dorsal groove. Legs mottled dark red brown and yellow. Dorsum of abdomen with paired dark areas separated by off-white transverse lines. Palpal tibia with long pointed retrolateral apophysis, and with shorter truncate ventral apophysis (Figs. 681, 684). Embolus short, broad at base and tapered rapidly to thin point, arising at distal extremity of tegulum (Fig. 681); tegulum with spurlike ridge at base of embolus (Fig. 681).

Female. Total length approximately 5.25 mm; carapace 2.25 ± 0.12 mm long, 2.24 ± 0.12 mm wide (10 specimens measured). General structure and color essentially as in male, but paler. Epigynum with shallow rimless

atrium (Fig. 683). Spermathecae broadly ovoid in outline, with small swellings (Fig. 682).

Range. California and New Mexico, northward to southern British Columbia and Alberta.

Comments. Specimens of *X. benefactor* lack the distinctive colors found in those of *X. alboniger*. They also have a spurlike tegular ridge and short embolus in the male palpus and a rimless epigynal atrium in the female. Specimens of *benefactor* have been collected by sweep nets in low shrubs.



Map 62. Collection localities of *Xysticus benefactor*.

Xysticus luctuosus (Blackwall)

Figs. 685–689; Map 63

Thomisus luctuosus Blackwall, 1836:489.

Xysticus convexus Thorell, 1856:170.

Xysticus pulverulentus Emerton, 1894:417, figs. 6, 6*a*, 6*b* (pl. 4) (preoccupied in genus *Xysticus*; *see* Gertsch 1939).

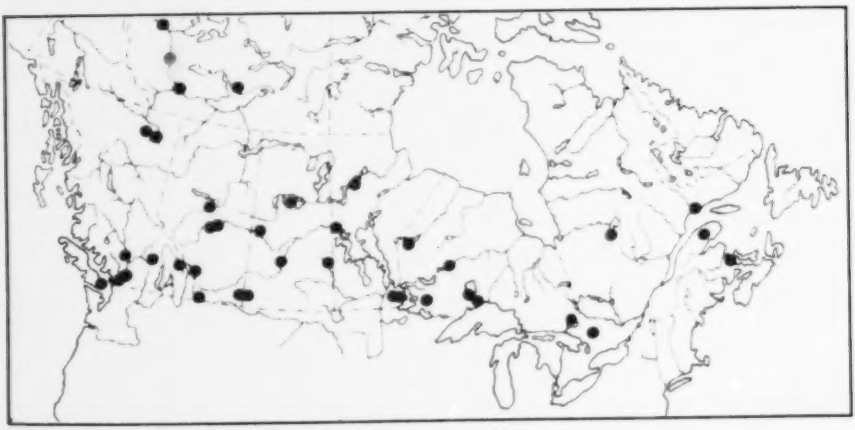
Xysticus lutulentus Gertsch, 1934:8, fig. 9; Turnbull et al. 1965:1257, figs. 66, 69, 143, 146, 179.

Xysticus mysticus Chamberlin & Ivie, 1942:79, fig. 225.

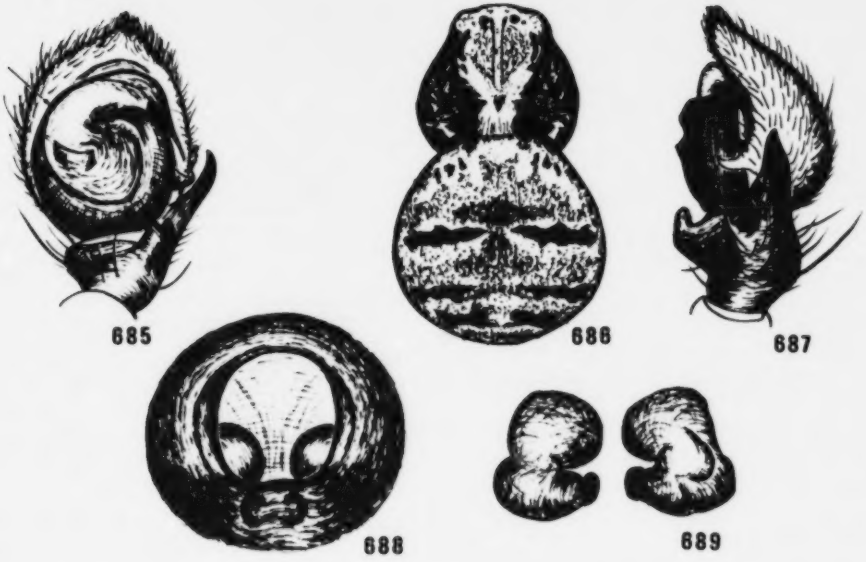
Male. Total length approximately 3.60 mm; carapace 2.20 ± 0.14 mm long, 2.16 ± 0.14 mm wide (13 specimens measured). Carapace dark brown, reticulated with orange, with white V and brown triangular spot anterior to dorsal groove. Legs mottled light brown and dark brown. Dorsum of abdomen with paired brown to purple areas separated by off-white median band. Palpal tibia with long pointed retrolateral apophysis (Fig. 687), and with shorter concave ventral apophysis (Fig. 685). Embolus short, broad at base, tapered rapidly to slender tip (Fig. 685); tegulum with ridge located at approximately 270° (Fig. 685).

Female. Total length approximately 4.80 mm; carapace 2.22–2.67 mm long, 2.13–2.67 mm wide (nine specimens measured). General structure and color essentially as in male, but paler, and dark areas on abdominal dorsum often reduced to transverse streaks (Fig. 686). Epigynum with elliptical atrium (Fig. 688). Spermathecae rather stout, angled, constricted at middle (Fig. 689).

Range. British Columbia and District of Mackenzie, N.W.T., to Quebec, southward to Oregon, Utah, and Wisconsin; Europe and Asia.



Map 63. Collection localities of *Xysticus luctuosus*.



Figs. 685–689. Structures of *Xysticus luctuosus*. 685, Palpus of male, ventral view; 686, Body of female, dorsal view; 687, Palpus of male, retrolateral view; 688, Epigynum; 689, Spermathecae.

Comments. Specimens of *X. luctuosus* resemble those of *X. alboniger*, *X. benefactor*, and *X. ellipticus*, but lack the distinctive colors of *alboniger*. They also have the tegular ridge at 270° on the palpus in the male and an elliptical atrium and angled spermathecae in the female. Specimens of *luctuosus* have been collected in pitfall traps, by sweep nets, and from wasp nests in wooded areas.

Xysticus ellipticus Turnbull et al.

Figs. 690–693; Map 61

Synema obscura Keyserling, 1880:64, fig. 32 (pl. 1).

Xysticus ellipticus Turnbull et al. 1965:1258, figs. 68, 71, 148, 151 (new name for *obscura* Keyserling, preoccupied in genus *Xysticus*).

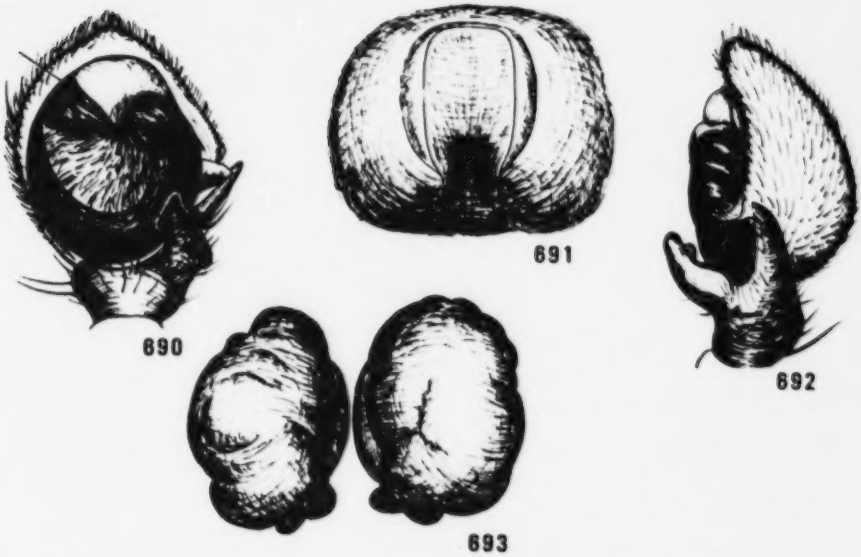
Male. Total length approximately 3.50 mm; carapace 3.20–3.40 mm long, 2.91–3.10 mm wide (four specimens measured). Carapace red brown, with off-white V and mottled pigment anterior to dorsal groove. Legs dark red brown, with few white spots and streaks. Dorsum of abdomen red brown, with off-white transverse band at anterior end. Palpal tibia with long pointed

retrolateral apophysis (Fig. 692), and with shorter broader ventral apophysis (Fig. 690). Embolus short, broad at base, tapered abruptly to fine tip (Fig. 690); tegulum with low ridge at base of embolus near distal extremity of tegulum (Fig. 690).

Female. Total length approximately 4.50 mm; carapace 3.66–3.73 mm long, 3.46–3.55 mm wide (two specimens measured). General structure and color essentially as in male, but dorsum of abdomen less uniform in color, and mottled red brown and off-white. Epigynum with approximately rectangular atrium (Fig. 691). Spermathecae elliptical in outline, with small surface swellings (Fig. 693).

Range. Alberta and southwestern Northwest Territories to New Brunswick, southward to Colorado and Texas.

Comments. Males of *X. ellipticus* differ from those of similar species by having a low tegular ridge, which is located near the distal extremity of the tegulum. Females differ by having a rectangular atrium. Specimens of *ellipticus* have been collected by pitfall traps in wooded areas.



Figs. 690–693. Genitalia of *Xysticus ellipticus*. 690, Palpus of male, ventral view; 691, Epigynum; 692, Palpus of male, retrolateral view; 693, Spermathecae.

Xysticus durus (Soerensen)

Figs. 694–697; Map 64

Xysticus ferrugineus Emerton, 1894:415, figs. 3, 3*a* (pl. 4).
Oxyptila dura Soerensen, 1898:230.
Xysticus moestus Banks, 1910:48 (new name for *ferrugineus* Emerton, preoccupied in genus *Xysticus*).
Xysticus keyserlingi Bryant, 1930*a*:135, figs. 9, 10.
Xysticus durus: Turnbull et al. 1965:1260, figs. 74, 77, 150, 153.

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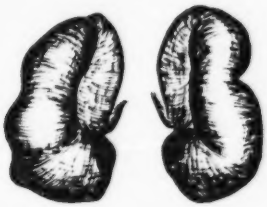
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Male. Total length approximately 5.00 mm; carapace 2.56–2.63 mm long, 2.58–2.63 mm wide (three specimens measured). Carapace mottled black and red brown or brown and yellow brown; pale median area enclosing several dark spots anterior to dorsal groove. Legs yellow brown to black, mottled with yellow. Dorsum of abdomen gray, with minute black or brown spots. Palpal tibia with short blunt retrolateral apophysis, with small intermediate apophysis (Fig. 696), and with slender recumbent ventral apophysis (Fig. 694). Embolus long, slender, with pars pendula extending nearly to midline of tegulum (Fig. 694); tegulum with tuberclelike apophysis that is hollowed basad near center (Fig. 694).

Female. Total length approximately 6.75 mm; carapace 2.93–3.94 mm long, 2.70–3.68 mm wide (five specimens measured). General structure and color essentially as in male, but carapace and abdomen paler. Epigynum with median septum bulbous in posterior two-thirds (Fig. 697). Copulatory tubes more than one-half length of spermathecae; spermathecae curved near posterior end (Fig. 695). Carapace setae not tapered, not clavate.

Range. Northwest Territories and British Columbia to northern Quebec; Greenland.

Comments. Specimens of *X. durus* mainly resemble those of *X. nigromaculatus*, but lack the clavate carapace setae of the latter. Males of *durus* also have the tegular apophysis hollowed on the basal side, and females have a long bulbous median septum and longer copulatory tubes. Specimens of *durus* have been collected on the ground in northern and alpine habitats.

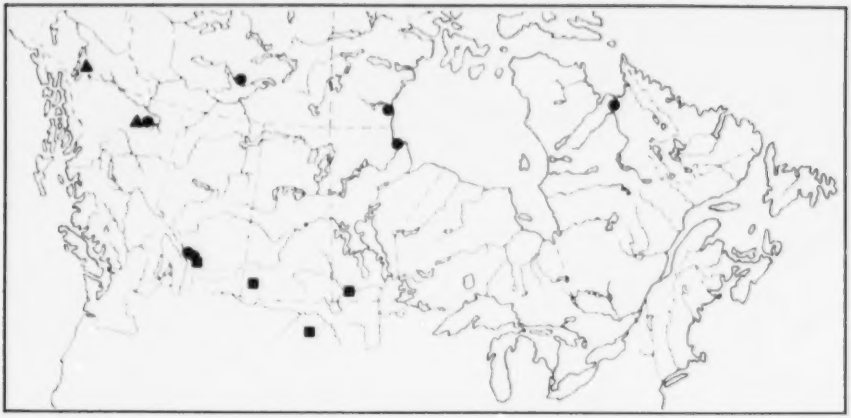
Xysticus nigromaculatus Keyserling

Figs. 698–701; Map 64

Xysticus nigromaculatus Keyserling, 1884*a*:670, fig. 18 (pl. 21); Turnbull et al. 1965:1260, figs. 73, 76, 154, 157.

Male. Total length approximately 5.40 mm; carapace approximately 4.00 mm long, 3.90 mm wide (one specimen measured). Carapace red black, with pale median area enclosing mottled pigment anterior to dorsal groove. Legs red black basad, mottled with yellow distad. Dorsum of abdomen gray, with small scattered black spots. Palpal tibia with short blunt retrolateral apophysis, with small intermediate apophysis (Fig. 700), and with slender erect knobbed ventral apophysis (Fig. 698). Embolus long, slender, with pars pendula extending beyond midline of tegulum (Fig. 698); tegulum with tuberclelike apophysis at center (Fig. 698).

Figs. 694–701. Genitalia of *Xysticus* spp. 694–697, *X. durus*. 694, Palpus of male, ventral view; 695, Spermathecae; 696, Palpus of male, retrolateral view; 697, Epigynum. 698–701, *X. nigromaculatus*. 698, Palpus of male, ventral view; 699, Spermathecae; 700, Palpus of male, retrolateral view; 701, Epigynum.



Map 64. Collection localities of *Xysticus durus* (●), *X. nigromaculatus* (■), and *X. leechi* (▲).

Female. Total length approximately 8.50 mm; carapace 4.60–4.99 mm long, 4.56–4.92 mm wide (three specimens measured). General structure and color essentially as in male, but legs mottled basad and distad. Epigynum with short broad median septum (Fig. 701). Copulatory tubes shorter than one-half length of spermathecae; spermathecae angled at posterior end (Fig. 699).

Range. Alberta to Manitoba, southward to New Mexico.

Comments. Specimens of *X. nigromaculatus* mainly resemble those of *X. durus*, but differ by having clavate body setae in both sexes. Males of *nigromaculatus* also lack a hollow basal surface of the tegular ridge, and females have a much shorter narrower median septum and shorter copulatory tubes. Specimens of *nigromaculatus* have been found on the ground and are often encrusted with soil.

Xysticus triangulosus Emerton

Figs. 702–706; Map 65

Xysticus triangulosus Emerton, 1894:416, fig. 4 (pl. 4); Turnbull et al. 1965:1261, figs. 79, 82, 156, 159.

Xysticus nicholsi Gertsch, 1939:399, fig. 266.

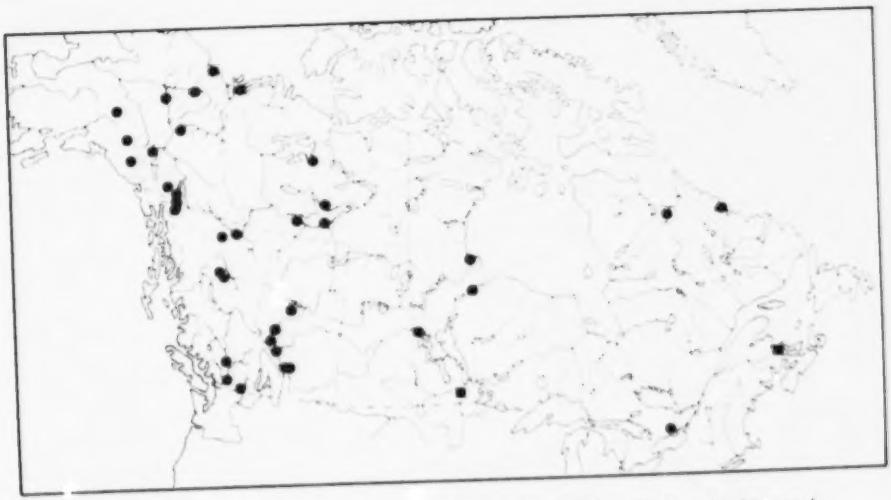
Male. Total length approximately 5.25 mm; carapace 2.51–3.35 mm long, 2.38–3.16 mm wide (five specimens measured). Carapace mottled red brown and yellow; lateral margins of pale median area dark brown. Legs mottled red brown and yellow. Dorsum of abdomen with paired red brown areas widely separated by yellow brown or off-white median and transverse

bands. Palpal tibia with short blunt retrolateral apophysis (Fig. 704), and with more slender hooked ventral apophysis (Fig. 702). Embolus short, broad at base, tapered rapidly to fine tip (Fig. 702); tegulum with small triangular ridge near center (Fig. 702).

Female. Total length approximately 7.70 mm; carapace 3.48 ± 0.45 mm long, 3.34 ± 0.49 mm wide (19 specimens measured). General structure and color essentially as in male, but colors duller and more variable (Fig. 706). Epigynum with large crescent-shaped median septum (Fig. 703). Copulatory tubes short, barely visible in dorsal view; spermathecae transversely grooved, expanded at posterior end (Fig. 705).

Range. Alaska to Labrador, southward through British Columbia and Alberta to Utah and Colorado in the west, and to southeastern Ontario in the east.

Comments. The small triangular tegular ridge, short embolus, and slightly hooked ventral tibial apophysis distinguish the males of *X. triangulosus* from males of other species. The females are distinguished by the large, crescent-shaped median septum. Specimens have been collected on the ground, mainly in subarctic and alpine meadows.



Map 65. Collection localities of *Xysticus triangulosus* (●) and *X. winnipegensis* (■).

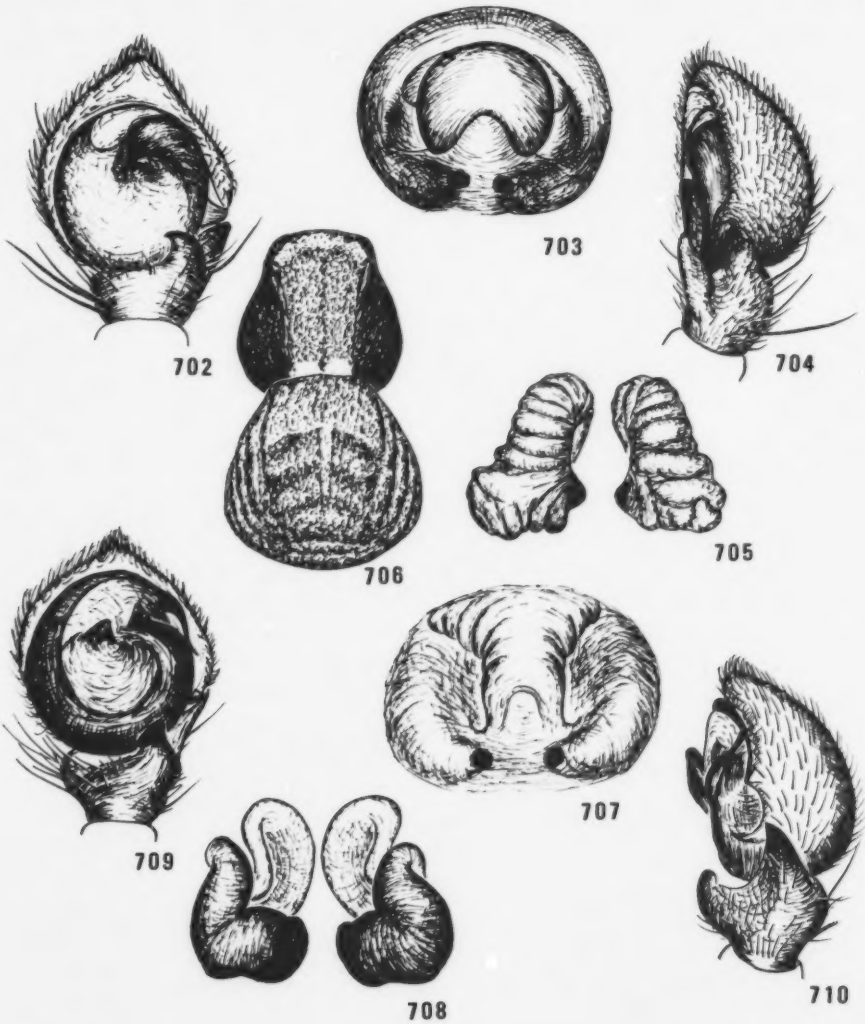
Xysticus leechi Turnbull et al.

Figs. 707, 708; Map 64

Xysticus leechi Turnbull et al. 1965:1261, figs. 155, 158.

Male. Unknown.

Female. Total length approximately 6.00 mm; carapace approximately 3.72 mm long, 3.58 mm wide (one specimen measured). Carapace dark



red brown, with mottled red brown and off-white pigment anterior to dorsal groove. Legs mottled red brown and off-white. Dorsum of abdomen pale gray brown, with few scattered dark spots, and with indistinct transverse bands. Epigynum with long transversely ridged median septum that has a hooded cavity in posterior margin (Fig. 707). Copulatory tubes long, folded upon themselves anterior to spermathecae; spermathecae moderately stout, with approximately 90° angle at middle (Fig. 708).

Range. Yukon Territory and northern British Columbia.

Comments. The female of *X. leechi* differs from females of the other species by its long transversely ridged excavated median septum and long folded copulatory tubes. The specimen was collected on the ground in high mountains.

Xysticus winnipegensis Turnbull et al.

Figs. 709, 710; Map 65

Xysticus winnipegensis Turnbull et al. 1965:1262, figs. 78, 81.

Male. Total length approximately 3.50 mm; carapace 1.80–1.90 mm long, 1.74–1.85 mm wide (three specimens measured). Carapace red brown, with pale median area enclosing distinct white V anterior to dorsal groove. Legs light brown, speckled with white. Dorsum of abdomen with paired pale red brown areas separated by off-white lines. Palpal tibia with blunt retrolateral apophysis (Fig. 710), and with shorter rounded ventral apophysis (Fig. 709). Embolus short, tapered, sinuous (Fig. 709); tegulum with triangular ridge near center (Fig. 709).

Female. Unknown.

Range. Southern Manitoba and New Brunswick.

Comments. The male of *X. winnipegensis* differs from males of other species by the short tapered sinuous embolus and triangular tegular apophysis. Specimens were collected by pitfall traps along roadsides in the vicinity of Winnipeg and by hand on a sphagnum bog in New Brunswick.

Figs. 702–710. Structures of *Xysticus* spp. 702–706, *X. triangulosus*. 702, Palpus of male, ventral view; 703, Epigynum; 704, Palpus of male, retrolateral view; 705, Spermathecae; 706, Body of female, dorsal view. 707 and 708, *X. leechi*. 707, Epigynum; 708, Spermathecae. 709 and 710, *X. winnipegensis*. 709, Palpus of male, ventral view; 710, Palpus of male, retrolateral view.

Xysticus rugosus Buckle & Redner

Figs. 711–714; Map 66

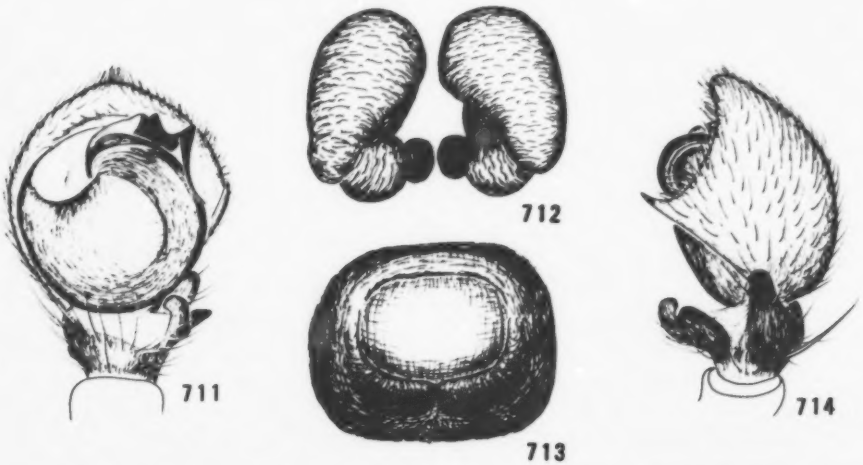
Xysticus bimaculatus Emerton, 1894:416, figs. 5, 5*a* (pl. 4).

Xysticus rugosus Buckle & Redner, 1964:1141, figs. 7, 8 (new name for *bimaculatus* Emerton, preoccupied in genus *Xysticus*); Turnbull et al. 1965:1264, figs. 162, 165; Leech 1969:633, figs. 1, 2.

Male. Total length approximately 4.80 mm; carapace approximately 2.16 mm long, 1.97 mm wide (one specimen measured). Carapace pale red brown, with off-white V and mottled pigment anterior to dorsal groove. Legs pale brown, darker dorsad, mottled with brown ventrad. Dorsum of abdomen gray, lightly spotted with brown and black. Palpal tibia with short blunt retrolateral apophysis, and with shorter hooked ventral apophysis (Figs. 711, 714). Embolus short, twisted, arising at distal extremity of tegulum (Fig. 711); tegulum round, flat in ventral view, with low wide ridge near prolateral margin (Fig. 711).

Female. Total length approximately 5.00 mm; carapace 2.27 ± 0.13 mm long, 2.17 ± 0.11 mm wide (eight specimens measured). General structure and color essentially as in male, but carapace with pair of brown spots on posterior declivity. Epigynum with approximately rectangular atrium, without median septum (Fig. 713). Spermathecae approximately kidney-shaped, finely rugose (Fig. 712).

Range. Rocky Mountains, extending westward to southern British Columbia and eastward to Alberta.



Figs. 711–714. Genitalia of *Xysticus rugosus*. 711, Palpus of male, ventral view; 712, Spermathecae; 713, Epigynum; 714, Palpus of male, retrolateral view.

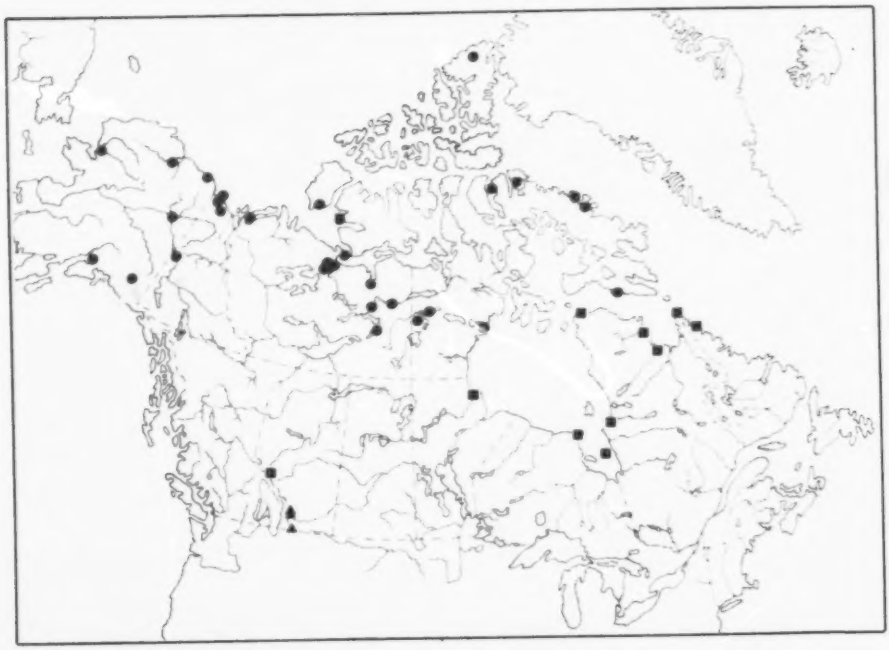
Comments. Specimens of *X. rugosus* resemble those of *X. labradorensis* and *X. deichmanni*, but differ by the embolus of the male, which is thicker than that of *labradorensis* and more slender than that of *deichmanni*. The female of *rugosus* differs by the kidney-shaped, finely rugose spermathecae. Specimens of *rugosus* have been collected among stones at or above timberline.

Xysticus labradorensis Keyserling

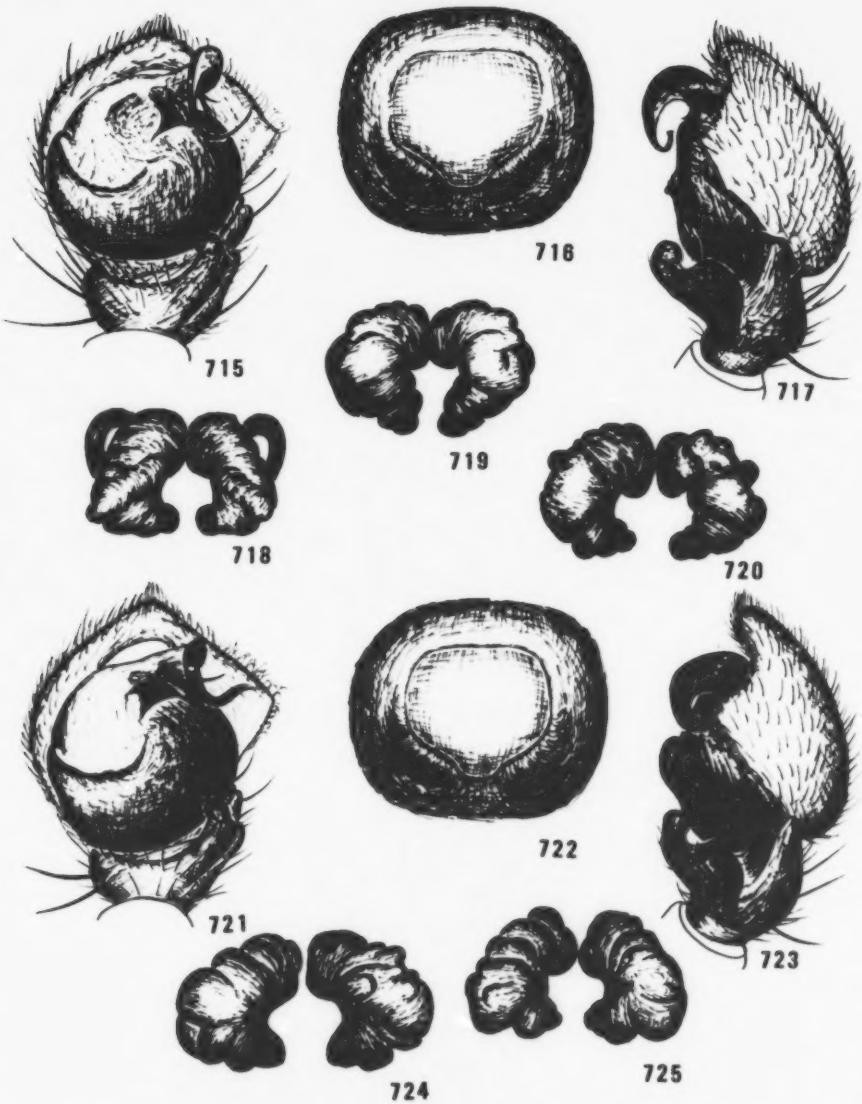
Figs. 715–720; Map 66

Xysticus labradorensis Keyserling, 1887:479, fig. 30 (pl. 6); Turnbull et al. 1965:1263, figs. 80, 83, 160, 163, 166.

Male. Total length approximately 4.50 mm; carapace 2.14 ± 0.15 mm long, 2.02 ± 0.18 mm wide (seven specimens measured). Carapace red brown to gray, with pale V and brown pigment anterior to dorsal groove, and with pair of brown spots on posterior declivity. Legs mottled brown and off-white.



Map 66. Collection localities of *Xysticus rugosus* (▲), *X. labradorensis* (■), and *X. deichmanni* (●).



Figs. 715–725. Genitalia of *Xysticus* spp. 715–720, *X. labradorensis*. 715, Palpus of male, ventral view; 716, Epigynum; 717, Palpus of male, retrolateral view; 718–720, Spermathecae. 721–725, *X. deichmanni*. 721, Palpus of male, ventral view; 722, Epigynum; 723, Palpus of male, retrolateral view; 724 and 725, Spermathecae.

Dorsum of abdomen with paired brown areas separated by indistinct white lines. Palpal tibia with short truncate retrolateral apophysis (Fig. 717), and with broad knobbed ventral apophysis (Fig. 715). Embolus rather slender, spiraled, arising at distal extremity of tegulum (Fig. 715); tegulum with low curved ridge at prolateral margin (Fig. 715).

Female. Total length approximately 5.00 mm; carapace 2.17 ± 0.12 mm long, 2.10 ± 0.12 mm wide (27 specimens measured). General structure and color essentially as in male, but body and legs tending toward gray. Epigynum without median septum (Fig. 716). Copulatory tubes usually partly visible laterad in dorsal view; spermathecae arched, transversely grooved, with small swellings (Figs. 718–720).

Range. Alberta and northern Manitoba to Labrador, southwestward to Colorado.

Comments. Specimens of *X. labradorensis* closely resemble those of *X. deichmanni*, but can be distinguished from the latter by the more slender embolus of the male and, usually, by the partly visible copulatory tubes of the female. Collections of *labradorensis* are from the ground in the subarctic and in the Rocky Mountains.

Xysticus deichmanni Soerensen

Figs. 721–725; Map 66

Xysticus deichmanni Soerensen, 1898:228; Turnbull et al. 1965:1263, figs. 84, 85, 161, 164.

Male. Total length approximately 4.50 mm; carapace 2.16 ± 0.11 mm long, 2.06 ± 0.12 mm wide (28 specimens measured). Carapace red brown to gray, with indistinct V and brown pigment anterior to dorsal groove, and with pair of brown spots on posterior declivity. Legs mottled brown and off-white. Dorsum of abdomen with paired brown areas separated by indistinct white lines. Palpal tibia with truncate retrolateral apophysis (Fig. 723), and with knobbed ventral apophysis (Fig. 721). Embolus rather stout, spiraled, arising at distal extremity of tegulum (Fig. 721); tegulum with low curved ridge at prolateral margin (Fig. 721).

Female. Total length approximately 5.50 mm; carapace 2.34 ± 0.12 mm long, 2.27 ± 0.12 mm wide (29 specimens measured). General structure and color essentially as in male, but body and legs more gray. Epigynum without median septum (Fig. 722). Copulatory tubes not visible in dorsal view; spermathecae arched, transversely grooved, with small swellings (Figs. 724, 725).

Range. Alaska to Ellesmere Island and Baffin Island; Greenland.

Comments. Specimens of *X. deichmanni* closely resemble those of *X. labradorensis*, but can be distinguished from the latter by the stouter embolus of the male and, usually, by the hidden copulatory tubes of the female. Collections are from the ground and on tents and other objects in the high arid arctic.

Glossary of anatomical terms

abdomen The posterior body division of a spider, divided from the cephalothorax by the pedicel.

alveolus A cuplike cavity on the ventral side of the cymbium of the male palpus containing the genital bulb.

anal tubercle A small prominence at the tip of the abdomen; the anus is situated on its ventral surface.

anteriad Toward the anterior end of the body.

anterior Pertaining to the foremost end of the body or of one of its main divisions.

anterolaterad Toward the anterior end and the side.

anterolateral Pertaining to the anterior end and the side.

anteromesad Toward the anterior end and the midline.

anteromesal Pertaining to the anterior end and the midline.

apical division That part of the genital bulb of the male palpus comprising the conductor, embolus, and associated structures.

apophysis A spine found on the male chelicerae, palpi, or legs and usually having a sexual function.

atrial Pertaining to the atrium.

atrium A cavity in the epigynal plate having the copulatory openings of the female in its floor or wall; it may be subdivided by a median septum.

basad Toward the base, or point of attachment, of an appendage or segment.

basal Pertaining to the base of an appendage or segment.

basal division That part of the bulb of the male palpus comprising the subtegulum and associated structures.

basitarsus The basal subdivision of the leg tarsus.

bidentate Having two teeth.

book lungs The paired booklike respiratory organs on the venter of the abdomen; representatives of Mygalomorphae have two pairs, those of Araneomorphae one pair (occasionally two).

calamistrum A series of stiff curved setae of uniform length along the dorsal surface of basitarsus IV in cribellate spiders.

carapace The dorsal plate of the cephalothorax, bearing the eyes and the dorsal groove, and representing the fused terga of the cephalothoracic segments.

cephalothorax The undivided head–thorax, or anterior body division, to which are appended the chelicerae, palpi, and legs.

chelicerae The paired, seizing and pinching organs hanging down at the anterior end of the cephalothorax; each comprises a large basal segment and a movable fang with, internally, the associated venom gland and muscles. They arise between the mouth and the palpi in the early embryo, but move anterior to the mouth and rostrum during embryonic development.

clavate Club-shaped.

claw A short, curved, usually toothed process at the tip of the pretarsus of a leg or palpus; in dionychous spiders, each leg pretarsus has two claws, in trionychous spiders, three.

claw tuft A bundle of setae at the tip of the leg tarsus in many dionychous spiders.

colulus A small median sclerite on the venter of the abdomen located in the membranous area at the base of the anterior pair of spinnerets.

conductor A structure in the male palpus on which the terminal part of the embolus rests; although primitively part of the apical division of the bulb, it may be a secondary structure derived from the tegulum, as in some male Lycosidae, or from the cymbium, as in some male Thomisidae.

copulatory tubes The paired tubes leading inward from the copulatory openings of the female and receiving the embolus of the male in copulation.

coxa The first or most basal segment of a leg or palpus.

cribellate Pertaining to spiders in which the abdomen has a cribellum.

cribellum A transverse, platelike spinning organ on the venter of the abdomen anterior to the spinnerets.

cuticle The outer layer of the integument, or body wall.

cymbium The tarsus of the male palpus, containing the alveolus on its ventral side.

dentate Toothed.

dionychous Pertaining to those groups of spiders in which the leg tarsus bears only two claws.

distad Toward the distal end of a leg or palpus.

distal Pertaining to the end of a leg or palpus farthest from the base.

distitarsus The distal subdivision of the leg tarsus.

distomesad Toward the tip and the midline.

distomesal Pertaining to the tip and the midline.

dorsad Toward the dorsum.

dorsal Pertaining to the uppermost surface of the body or of an appendage.

dorsal groove A median furrow, or groove, on the carapace marking the presence of an ingrowth of the body wall on which the dilator muscles of the sucking pump are attached.

dorsum The entire upper surface of the body; also used for the upper surface of the abdomen.

ecribellate Pertaining to spiders in which the abdomen has no cribellum.

emarginate Having a notched margin.

embolus The intromittent, or inserting, organ of the male palpus.

epigastric Pertaining to the ventral side of the abdomen; e.g., the epigastric scutum is a plate found on the abdominal venter of some spiders anterior to the genital groove.

epigynum The copulatory organ of the female located in the midline immediately anterior to the genital groove; usually with a sclerotized plate in which the copulatory openings are found.

epistome An outgrowth of the body wall at the base of the labrum and partly covering the preoral cavity in front; thought to be the morphological equivalent of the insect clypeus.

fang The distal piercing segment of the chelicera.

fang furrow A depression along the distomesal surface of the chelicera that receives the folded fang.

femur The third from the base and usually longest segment of a leg or palpus.

fertilization tubes The paired tubes by which semen stored in the spermathecae of the female is conveyed to the eggs as they pass out of the body.

front That part of the carapace located between the anterior margin and the anterior row of eyes.

genital bulb The copulatory apparatus lying within the alveolus of the cymbium on the male palpus.

genital groove A transverse groove on the venter of the abdomen in which lie the openings of the internal genitalia (ovaries, testicles) and a pair of book lungs.

haematodocha An inflatable sac that extends and rotates the sclerotized parts of the bulb of the male palpus into copulatory position when filled with haemolymph from the body cavity.

hood A pocketlike cavity at the anterior end of the epigynum of some female spiders.

integument The body wall.

labium The lower lip, which closes the preoral cavity behind; it develops from the sternum of the palpal segment in the embryo.

labrum The upper lip, which is appended to the epistome, with the combination forming the rostrum.

laterad Toward one side.

lateral Pertaining to the side.

laterigrade Denotes the orientation of the legs of such spiders as Thomisidae in which these limbs are partly rotated on their bases so that the anatomically prolateral surface is uppermost; also used to describe the mode of locomotion of such spiders.

longitudinal Lying parallel to the midline of the body.

lorum The tergum of the pedicel.

macroseta An erectile seta that arises from a membranous area on the legs and palpi.

median Pertaining to the middle.

median apophysis The appendage of the tegulum on the bulb of the male palpus.

median septum A raised longitudinal piece on the floor of the atrium of the epigynum.

mesad Toward the midline.

mesal Pertaining to the midline.

middle division That part of the bulb of the male palpus comprising the tegulum and associated structures.

midline An imaginary line dividing the body into right and left halves.

nonclavate Not club-shaped.

ocular quadrangle The area enclosed by certain groups of eyes; e.g., the median ocular quadrangle of spiders with the eyes in two transverse rows is the area enclosed by the anterior median eyes and posterior median eyes.

opisthosoma The pedicel and abdomen together.

palea A convex usually rugose pad at the distal end of the genital bulb of the palpus in some male spiders.

palp-coxal lobes The paired lobes on the prolateral surfaces of the palpal coxae; they form the sides of the preoral cavity.

palpus (pl., palpi) One of a pair of leglike appendages arising between the preoral cavity and the first pair of legs; in adult male spiders, modified as a semen-storing and copulatory organ.

paracymbium An apophysis at the base of the cymbium of the palpus in some male spiders.

paraembolar apophysis An apophysis on the base of the embolus in some male spiders.

pars pendula A thin flap along the margin of the embolus in some male spiders.

patella The fourth segment from the base of a leg or palpus, forming a rigid piece with the tibia.

pedicel The slender connection between cephalothorax and abdomen; the first opisthosomatic segment.

petiole A slender sclerite in the bulb of the male palpus connecting the subtegulum with the alveolar wall.

posteriad Toward the posterior end.

posterior Pertaining to the hindmost end of the body or to one of its main divisions.

posteromesad Toward the posterior end and the midline.

posteromesal Pertaining to the posterior end and the midline.

posterolaterad Toward the posterior end and the side.

posterolateral Pertaining to the posterior end and the side.

preoral cavity The entrance passage anterior to the mouth, bounded anteriad by the rostrum, laterad by the palp-coxal lobes, and posteriad by the labium.

pretarsus The seventh or terminal segment of a leg or palpus; bearing the claws.

procurved Denotes the anterior displacement of the ends of a transverse, otherwise straight row (of eyes, for example) or groove.

prograde Denotes the normal or nonlaterigrade orientation of the legs in spiders with the limbs not rotated on their bases; also used to describe the mode of locomotion of such spiders.

prolaterad Toward the prolateral surface.

prolateral Pertaining to the lateral surface of a leg or palpus nearest the anterior end of the body, with the appendage extended at right angles to the trunk.

prolaterobasad Toward the prolateral side and the base.

prolaterobasal Pertaining to the prolateral side and the base.

prolateromesad Toward the prolateral side and the midline.

prolateromesal Pertaining to the prolateral side and the midline.

prolateroventrad Toward the prolateral side and the venter.
prolateroventral Pertaining to the prolateral side and the venter.
promargin The anterior margin of the fang furrow.

rastellum A series of stout setae forming a digging structure on the chelicerae of certain spiders.
recurved Denotes the posterior displacement of the ends of a transverse, otherwise straight row (of eyes, for example) or groove.
retrolaterad Toward the retrolateral surface.
retrolateral The lateral surface of a leg or palpus nearest the posterior end of the body, with the appendage extended at right angles to the trunk.
retrolaterobasad Toward the retrolateral side and the base.
retrolaterobasal Pertaining to the retrolateral side and the base.
retrolaterodistad Toward the retrolateral side and the tip.
retrolaterodistal Pertaining to the retrolateral side and the tip.
retromargin The posterior margin of the fang furrow.
rostrum The combined epistome and labrum, which together cover the preoral cavity anteriad; thought to be the morphological equivalents of the insect clypeus and labrum respectively.

scape A median unpaired process of the epigynal plate, free at one end and usually directed posteriad.
sclerite A sclerotized plate forming part of the body wall.
sclerotized Hardened and darkened through tanning of proteins.
scopula (pl., scopulae) A brush of stiff flattened setae along the ventral surface of the leg; a scopulate leg is one that is provided with a scopula.
scutum A sclerite covering part of the abdomen; e.g., dorsal scutum, epigastric scutum.
segment One of a series of ringlike divisions into which the body or an appendage is divided.
seminal duct A tube that conducts the semen from the interior of the male palpus to the embolus.
serrated Notched like a saw.
seta (pl., setae) A bristlelike outgrowth of the cuticle secreted by a single cell and supplied with a nerve; setae may be modified in shape, e.g., flattened or clublike.
spermatheca (pl., spermathecae) One of a pair of semen-storing organs of the female.
spermathecal organ A small prominence at or near the junction of copulatory tube and spermatheca.
spine A fixed, usually pointed, rise in the body wall.
spinnerets The paired appendages at the posterior end of the abdomen through which liquid silk passes from the silk glands to the outside; usually occurring in three pairs, anterior, median, and posterior.
spiracle Tracheal opening in the body wall, located on the venter of the abdomen.
sternum The ventral wall of a body segment; also used for the fused sterna of the cephalothorax.
subtegulum A ringlike sclerite in the wall of the basal haematodocha in the bulb of the male palpus.

subterminal apophysis A sclerotized piece in the apical division of the bulb of the male palpus.
suture A groove in the body wall.

tapetum A carpet or sheath of cells behind the retina of the eye reflecting light that enters the retina outward again, thus causing the shining of the eyes in faint light.
tarsal comb A midventral series of serrated setae on distitarsus IV of some spiders; e.g., Theridiidae.
tarsus (pl., tarsi) The sixth segment of a leg or palpus from the base; in legs, subdivided into basitarsus and distitarsus.
tegulum A sclerite of the middle division of the genital bulb in the male palpus; usually the dominant ventral sclerite of the unexpanded palpus in hunting spiders.
tergum (pl., terga) The dorsal wall of a body segment.
terminal apophysis A variously shaped sclerite of the apical division of the genital bulb in the male palpus.
tibia The fifth segment from the base of a leg or palpus, forming a rigid piece with the patella.
tooth A spine found on the chelicerae and assisting in feeding; also, a small outgrowth on the paired claws of the leg in many spiders.
trachea The internal system of tubes through which air exchange takes place, thus supplementing and sometimes replacing the book lungs; their openings are the spiracles.
transverse Lying at right angles to the midline of the body.
trichobothrium (pl., trichobothria) A fine, erect kind of seta arising from a rimmed socket and found on the legs and palpi.
trionychous Denotes groups of spiders in which each leg tarsus has three claws.
trochanter The second segment from the base of a leg or palpus.
truncate Squared rather than rounded or pointed at the tip.
tubercle A small, fixed, usually rounded rise in the body wall; eyes may be located on tubercles.

venom gland The venom-secreting gland within the chelicera or the cephalothorax, or both, and opening on the cheliceral fang.
venter The undersurface of the body; also used for the undersurface of the abdomen or of the body's appendages.
ventrad Toward the venter.
ventral Pertaining to the venter.

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